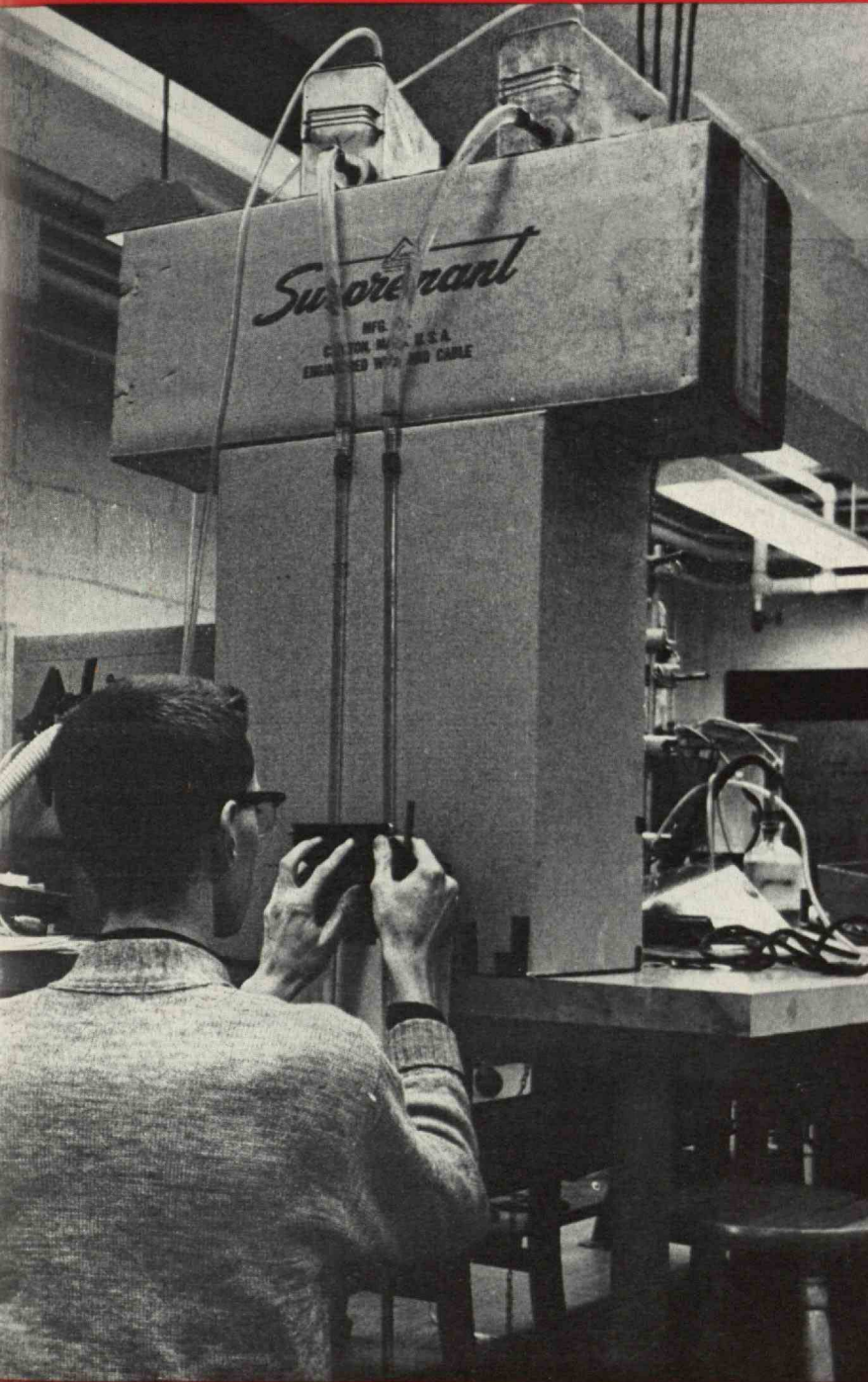


# Technology Review

Edited at the Massachusetts  
Institute of Technology

March, 1962



Laboratory Work  
for Engineers—Page 19

# technology review

Published by MIT

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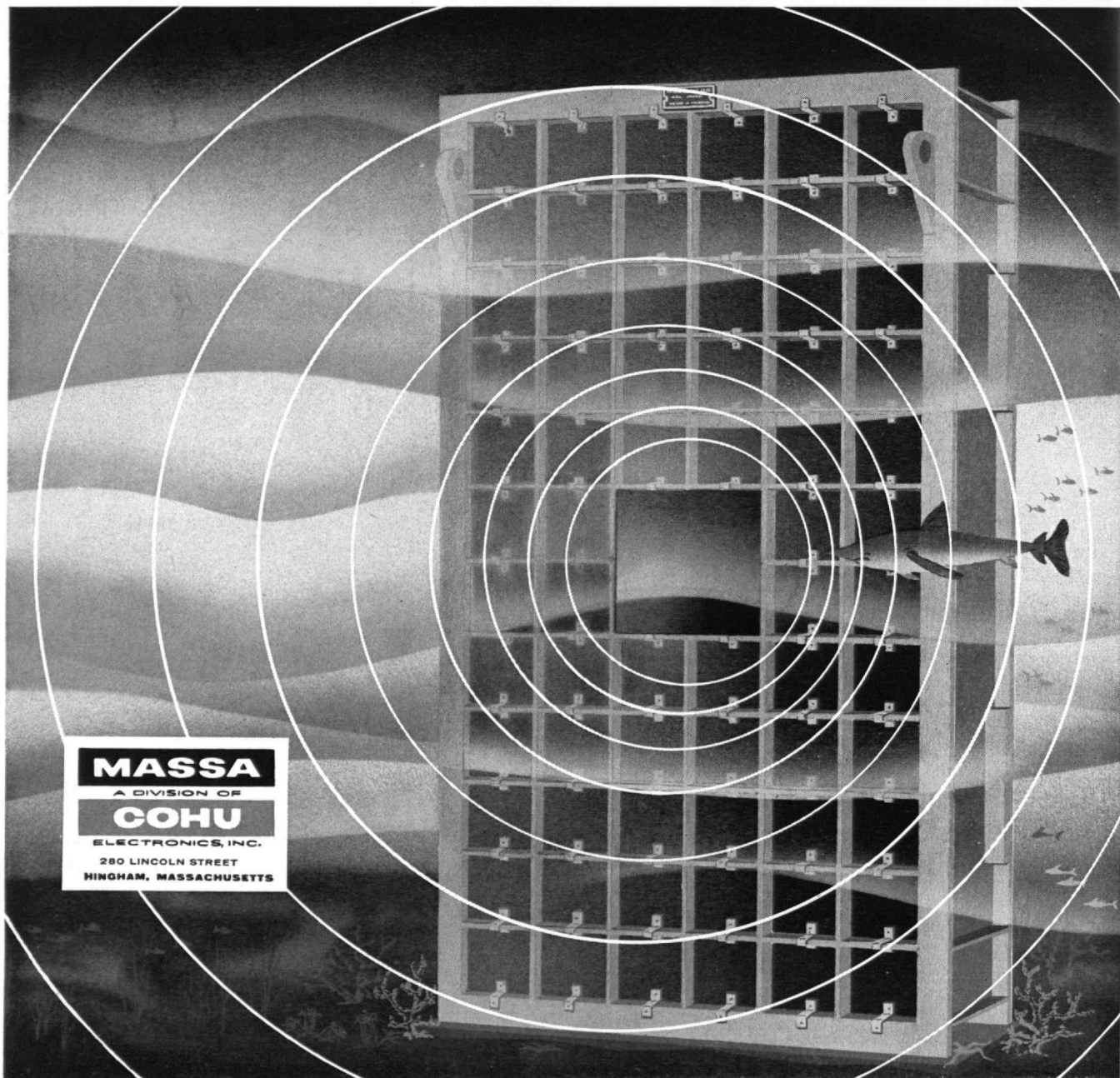
A few openings are available for qualified electroacoustic engineers. Send outline of experience to the attention of Mr. Frank Massa. An equal opportunity employer.

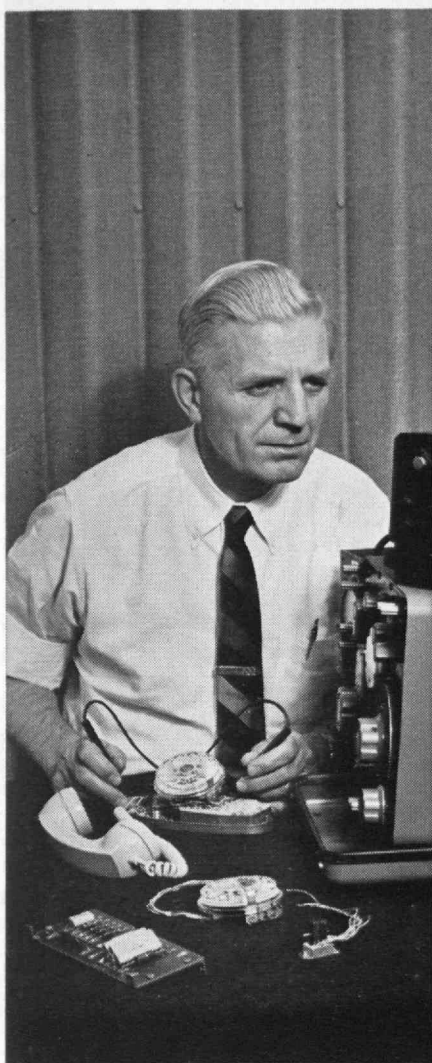
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All three—research, manufacture, operation—are interdependent and indispensable. Working as a team with a common goal, they give this country the world's finest telephone service and more telephones than all other countries combined!



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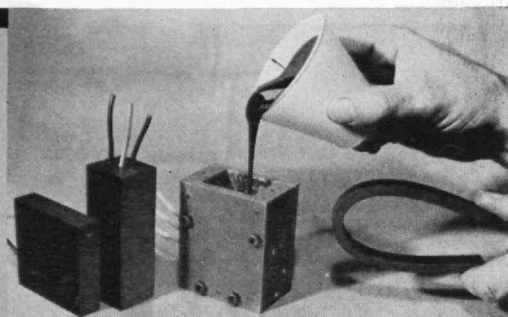
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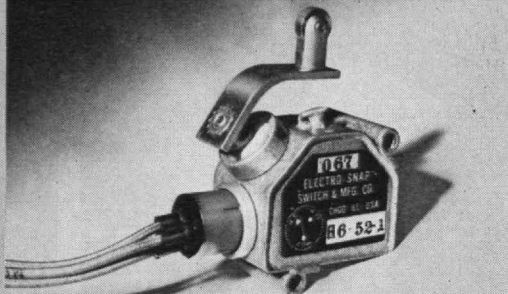
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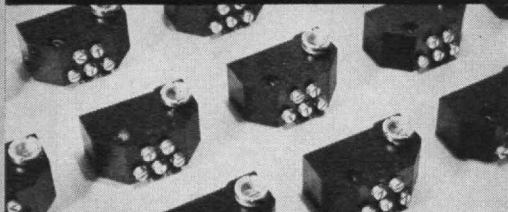
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# Technology Review

Reg. U.S. Pat. Off.

Volume 64, Number 5

Edited at the Massachusetts Institute of Technology

March, 1962

## Feedback

### Technical Manpower Utilization

FROM ARTHUR J. WEINBERGER, '41:

I was glad to see Joseph S. Kaming's letter on "The Most Wanted Class?" in The Review for November. It pointed up an aspect of technical manpower utilization which is particularly acute for the graduates of the better technical schools. By good schools I mean those which stimulate their students to grow intellectually, and to be creative. Though it has been quite some time since I attended Tech, Mr. Kaming's letter reminded me that it was at M.I.T. that I first felt the thrill of intellectual challenge, and the satisfaction of meeting it well. Fortunately, my own first industrial experience carried with it a considerable measure of the same kind of challenge. But now, after a broader experience, I can appreciate the problem of Mr. Kaming and his classmates . . . at least those whose initial experience in industry was of as little challenge as he describes. What a letdown, and it seems ironic that the greatest letdown should be for the group who have received the most desirable kind of education, one which excites and challenges.

It may be argued that scientists and engineers are, in the main, better utilized than Mr. Kaming's letter would indicate, and that his is the reaction of a vocal and disgruntled minority. This I doubt, and cite the large number of technical people who leave their fields as my evidence, along with the comments of those people as to why they left it. Some leave to get more money elsewhere, but that seems to me a backward way of saying that engineers are not producing enough to be worth more. But a very large number leave because they are frustrated in their desire to make contributions under difficult circumstances.

I do not have the answers to the problem of utilizing technical people effectively nor, to the best of my knowledge, does anyone else. However, it is encouraging that we're beginning really to work at this rather than class as malcontents the men who

(Continued on page 40)



**SIDEWALK SUPERINTENDING** is a major extracurricular activity at M.I.T. this year. Above you see a 48-inch water line being installed to link the new National Magnet Laboratory on Albany Street with the Charles River—one of the many construction jobs begun in the last few months.

EDITOR: Volta Torrey; BUSINESS MANAGER: R. T. Jope, '28; CIRCULATION MANAGER: D. P. Severance, '38; EDITORIAL ASSOCIATES: J. J. Rowlands, Francis E. Wylie, John I. Mattill; EDITORIAL STAFF: Ruth King, Roberta A. Clark; BUSINESS STAFF: Madeline R. McCormick, Patricia Fletcher; PUBLISHER: H. E. Lobdell, '17.

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### Contents

### The Cover

John E. Gibbons, '62, is shown with his wind tunnel (left), and Donald C. Fraser, '62, with apparatus he devised to keep the amplitude of motion of an electromagnetic shaker constant as the frequency varies. Both are students in the aeronautical engineering laboratory described in an article on page 19.

### Individuals Noteworthy

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The Alumni Association's nominees and other M.I.T. men in the news.

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15

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19

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Visiting Professor Platt challenges you to do that much analytical reasoning every day.

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Lincoln Laboratory photos are both useful and beautiful.

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29

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33

Professors and students re-examine the cane and Braille in an educational research program.

### Institute Yesteryears

35

Items that were news at M.I.T. 25, 50, 75, and 87 years ago.

# Individuals Noteworthy

## Alumni Nominees

WILLIAM L. TAGGART, JR., '27, has been nominated to be the 69th President of the M.I.T. Alumni Association. Others presented by the National Nominating Committee for the balloting this year include:

For Vice-president, *F. Leroy Foster*, '25.

For Executive Committee membership, *Howard L. Richardson*, '31, and *George J. Schwartz*, '42.

Mr. Taggart is executive vice-president, Dewey and Almy Chemical Company, Division of W. R. Grace, in Cambridge. Dr. Foster is director of the Division of Sponsored Research at M.I.T. and the Lowell Institute School. Mr. Richardson is executive vice-president, The Stanley Works, in New Britain, Conn., and Mr. Schwartz is president of the Compo Shoe Machinery Corporation, in Waltham, Mass.

For nomination as Alumni Term Members of the Corporation, the committee has submitted the names of:

*Theodore A. Mangelsdorf*, '26, Senior Vice-president, Texaco, Inc., New York;

*Frank R. Milliken*, '34, President

and Director, Kennecott Copper Corporation, New York; and

*D. Reid Weedon, Jr.*, '41, Vice-president, Arthur D. Little, Inc., Cambridge, and 1961-1962 President of the Alumni Association.

Nominees for the National Nominating Committee are: District 8, *William H. Mills*, '34, *Clarence M. Cornish*, '24, and *Franklin E. Penn*, '34; District 9, *Benjamin A. Oxnard*, '25, *Earl L. Bimson*, '43, and *Robert A. Fowler*, '54; and District 10, *E. Robert de Luccia*, '27, *William L. Stewart, Jr.*, '23, and *Gaynor H. Langsdorf*, '32.

## Honors to Alumni

MEDALISTS and recent recipients of other distinctions include:

*Francis W. Sears*, '20, and *Sanborn C. Brown*, '44, respectively, the Oersted Medal, and a Distinguished Service Citation, by the American Association of Physics Teachers . . . *C. Richard Soderberg*, '20, the New England Award, by the Engineering Societies of New England;

*Arthur F. Merewether*, '25, the Robert M. Losey Award "for outstanding contributions to the science of meteorology as applied to

aeronautics," and *Douglas G. Harvey*, '53, named as the "outstanding young man of 1961 in the aerospace field," by the Institute of the Aerospace Sciences . . . *Richard H. Pough*, '26, the Conservation Award, by American Motors Corporation;

*Stanley Backer*, '41, the Harold DeWitt Smith Memorial Medal, by the American Society for Testing and Materials . . . *Clarence J. Baldwin, Jr.*, '57, named as "outstanding young electrical engineer of 1961," by Eta Kappa Nu Association.

## New Posts

NAMED in the news recently were the Alumni whose elections, promotions, and appointments follow:

*Samuel B. Smith*, '28, as Chief Consulting Engineer, Ebasco Services, Inc. . . . *Arthur B. Marsh*, '29, as Chairman, Aerospace Nylok Corporation . . . *James B. Fisk*, '31, as a Director, Equitable Life Assurance Society;

*Dayton H. Clewell*, '33, as General Manager, Research and Engineering, Socony Mobil Oil Company, Inc. . . . *Bernard N. Stiller*, '34, as Area Manager, U.S. Atomic Energy Commission, Paducah, Ky. . . . *Charles E. Reed*, '37, as Vice-president, General Electric Co.;

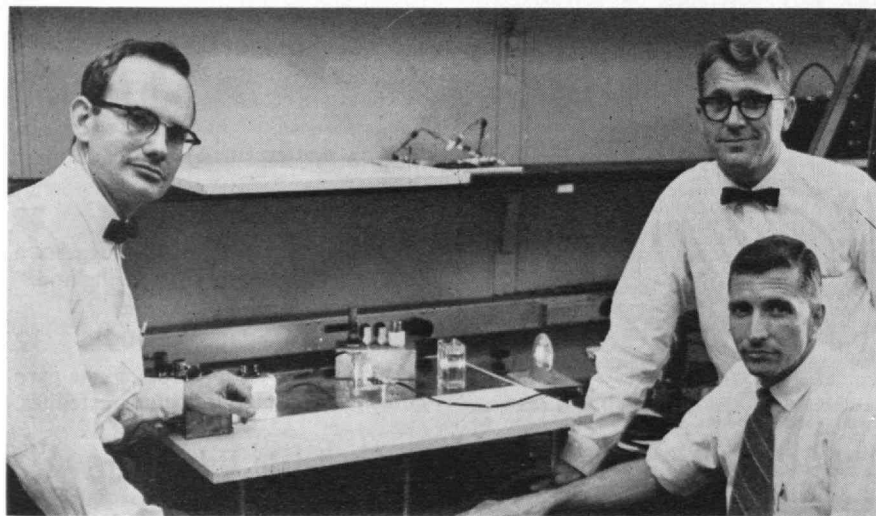
*Robert H. Wolin*, '37, as Vice-president and Chief Engineer, Combustion Engineering, Inc. . . . *Howard Banzett*, '38, as Works Manager, Aluminum Company of America, Lancaster, Pa. . . . *Morris Neiburger*, '41, as President, American Meteorological Society;

*Arch C. Scurlock*, '43, as Chairman, Nuclear Science and Engineering Corporation, Pittsburgh, Pa. . . . *H. Bruce Fabens*, '44, as Secretary, Lamson and Sessions Company . . . *Arthur Y. Taylor*, '46, as President, Jackson and Moreland, Inc., Boston.

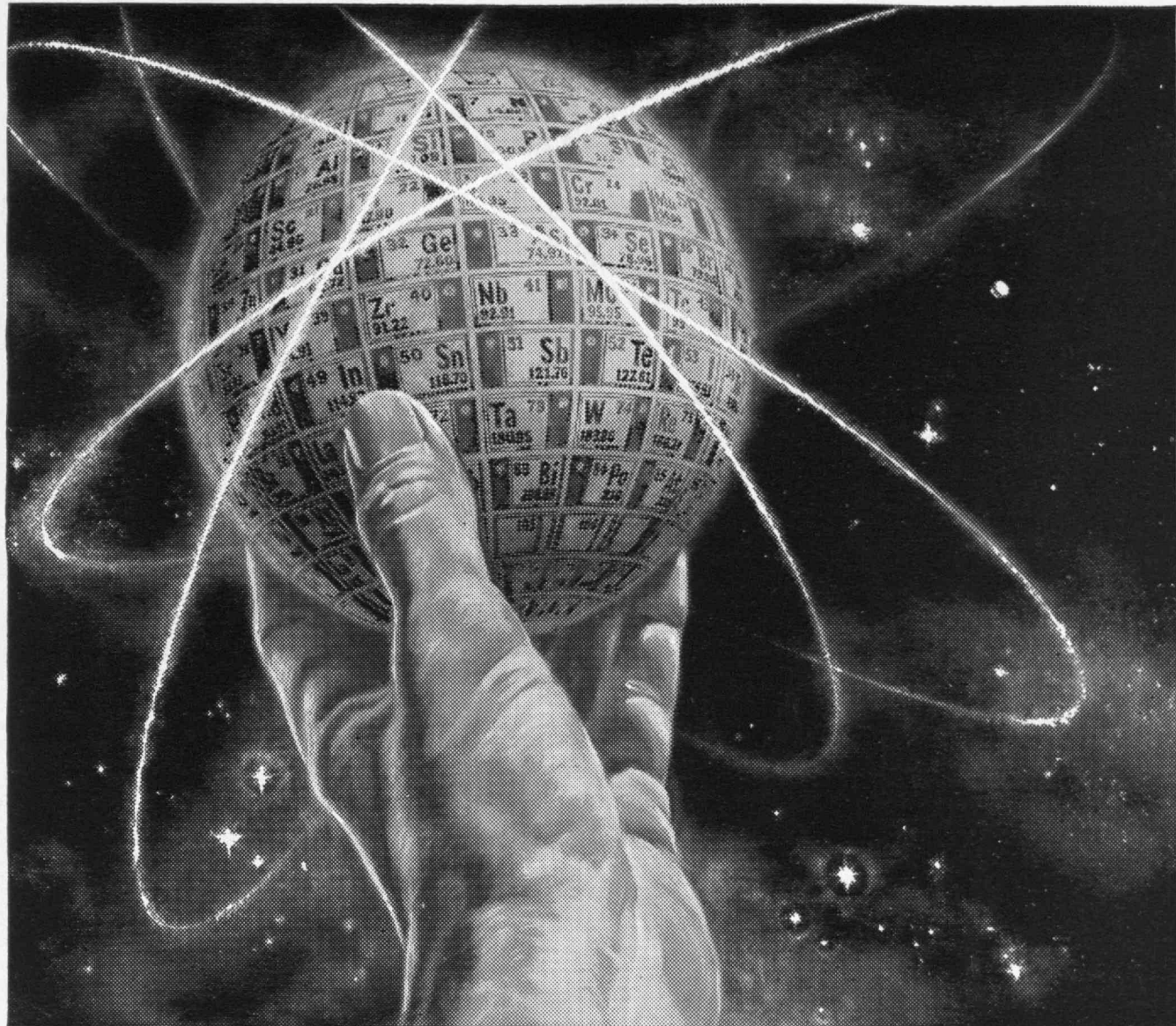
## Compton Lectures

I. I. RABI, Professor of Physics at Columbia University and 1944 Nobel prize winner, will give a series of Karl Taylor Compton lectures at M.I.T. this month. The lectures will be at 8:00 P.M. in Kresge Auditorium on the evenings of March 6, 8, 13, 15, 20, and 22. Professor Rabi will also participate in special seminars on March 9, 16, and 23.

(Continued on page 6)



**DIRECT AMPLIFICATION** of ultrasonic waves in a piezoelectric semiconductor was reported last fall by *A. R. Hutson*, '54, standing at right, and his Bell Telephone Laboratories colleagues, *D. L. White* (left) and *J. H. McFee* (seated). They amplified an ultrasonic wave traveling through a cadmium sulfide crystal by applying a direct-current electric field in the direction of wave propagation.



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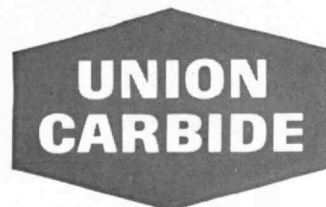
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Periodic Chart ©Welch—Chicago

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**LEXINGTON 73, MASSACHUSETTS**

## Individuals Noteworthy

(Continued from page 4)

### H. F. Taylor: 1913-1962

THE DIRECTOR of the M.I.T. Foundry Laboratory, Professor Howard F. Taylor, '46, died on January 16. Professor Taylor carried the spirit of scientific method to foundry engineering, which for centuries had been based on a trial-and-error tradition, and made the M.I.T. Foundry Laboratory the country's leading foundry research facility.

Born in Leslie, Mich., in 1913, he studied at Michigan State College, joined the staff of the Naval Research Laboratory in Washington in 1937, and came to M.I.T. on leave from that laboratory in 1945. He became associate professor in 1946, professor in 1952, and when the American Brake Shoe Company established the country's first professorship in foundry metallurgy at M.I.T. in 1955 it was awarded to him in recognition of his work.

Professor Taylor published widely in the professional literature, and received the first Peter L. Simpson Gold Medal of the American Foundrymen's Society in 1946 and the Army-Navy Distinguished Civilian Award in 1948. He was a member of Tau Beta Pi, Sigma Xi, and several metallurgical and foundry organizations.

His home was in Belmont, and he is survived by his wife, Edith, and three sons, Howard Victor, Alan Clark, and Stephen Gibbs Taylor.

### OEG Economist

JOHN N. FRY, after teaching at Kansas Wesleyan University and the University of Houston, has joined the Economics Division of the M.I.T. Operations Evaluation Group which is concerned largely with naval and marine problems involving logistics and weapons. Dr. Fry was educated at Texas A. & I. and the University of Texas.

### Maclaurin Chapel

AUCKLAND UNIVERSITY in New Zealand is to have a Maclaurin Chapel, according to the New Zealand press, as a result of a gift from Sir William Goodfellow. It will commemorate Sir William's son, who was killed in Europe in 1944, and Richard Cockburn Maclaurin, who was the sixth president of M.I.T.

(Concluded on page 10)

I like their price policy: cost plus a moderate profit.  
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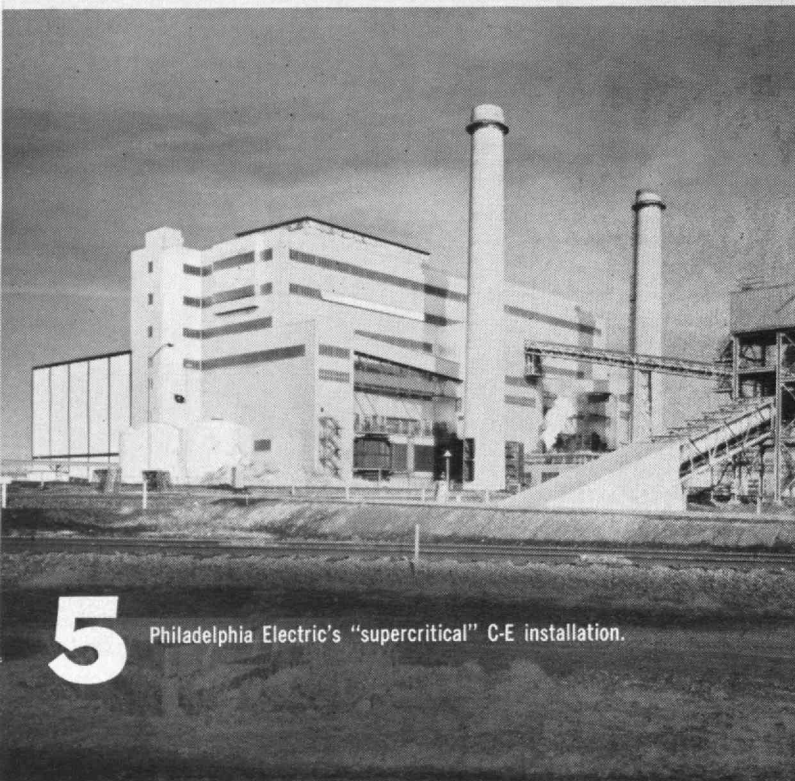
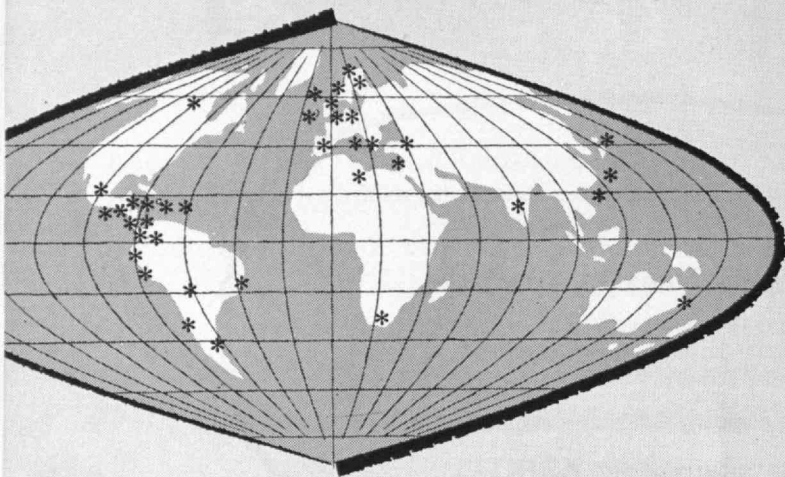
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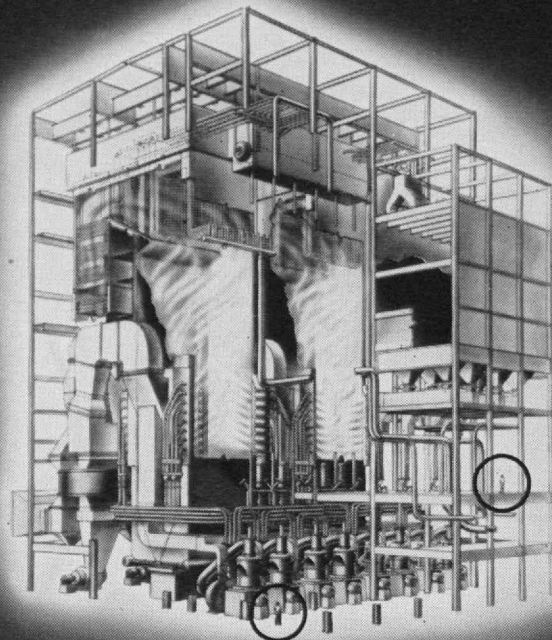
1

Asterisks indicate locations of C-E associates, licensees or representatives.



5

Philadelphia Electric's "supercritical" C-E installation.

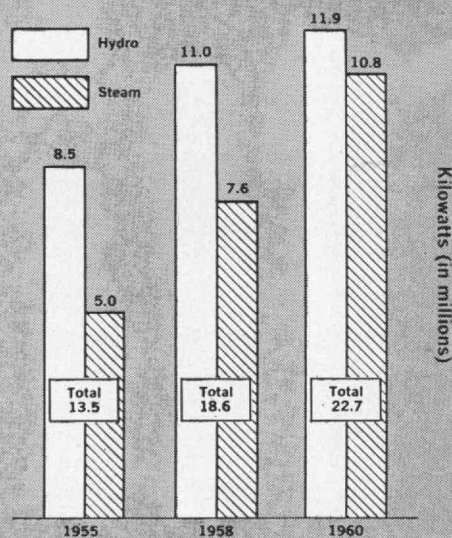


2

Cutaway of a C-E Controlled Circulation Steam Generator. Note six-foot men (in circles).

6

The rapid growth of Japanese electric power.



## Power Progress around

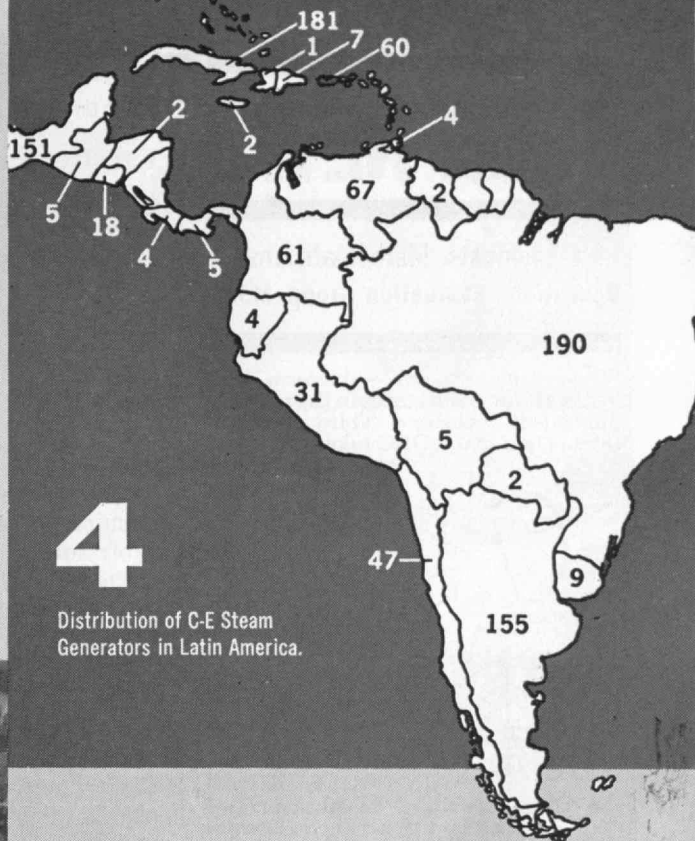
- Forming a network for power progress around the world, associates, licensees or representatives of Combustion Engineering are located in 38 major countries.
- The largest steam generators (built or under contract) in Australia, the Far East, Continental Europe, the United States . . . the world . . . are of C-E *Controlled Circulation* design.
- Recently, C-E was host to engineering executives from associates and licensees—representing 13 nations and five continents—for a five-day international technical conference on advanced steam generating practice.
- In Latin America, there are more than 1,000 C-E Steam Generators. These range from industrial "package" boilers to the largest electric utility unit in all Latin America.



# 3

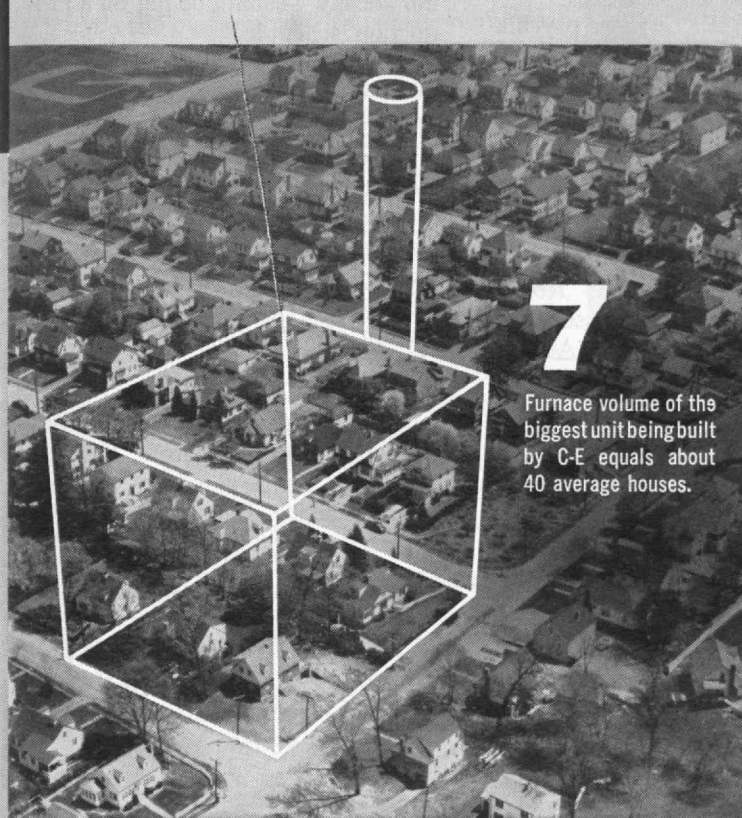
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Japan	Mitsubishi Heavy-Ind. Reorg. Ltd.
Japan	Mitsubishi Shipbuilding & Engineering Co. Ltd.
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Sweden	AB Svenska Maskinverken
Union of South Africa	Combustion Engineering Africa (Pty.) Ltd.



# 4

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# 7

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# 8

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## the World

**5** The world's most advanced steam generator, built by C-E for Philadelphia Electric Co. in the U. S., produces 1,200°F steam at a "supercritical" pressure of 5,000 pounds per square inch.

**6** Each of the four *Controlled Circulation* steam generators that C-E is now building for Japanese power companies will be larger and of higher capacity than any steam generator ever exported from the U. S.

**7** The world's first million-kilowatt steam generator is being built by C-E for Consolidated Edison Co. of New York. This *Controlled Circulation* unit will be nearly twice the size of the largest now in service.

**8** In 1950, the C-E *Controlled Circulation* Steam Generator became commercially available. Today, worldwide, 193 units are in service or under contract—to serve an electrical capacity of 43,713,000 kilowatts.

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# TECH NEWS

for Scientists, Mathematicians  
Operations Evaluation Group, M.I.T.

"Operations research"—the term itself—has attained full status in the recently published Webster's Third International Dictionary. OEG takes particular pleasure in this recognition because of our background as the oldest military operations research organization in the country.

Now when someone asks, "But what do you do?" we can refer him to Webster's.

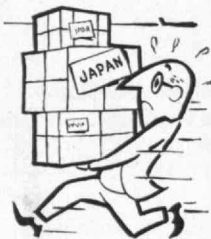
OEG advises the Chief of Naval Operations and certain Fleet and Force commanders regarding operational problems susceptible to quantitative analysis. A recent example is collected under the title, "The Selection of Cargo for Air Transport." Here the objective was to determine criteria for shipping the myriad replacement parts stocked by the Navy's Yokosuka (Japan) Supply Depot. One interesting discovery: Less than 1% of the line items account for well over half the dollar value of annual issues at Yokosuka.

The more sobering content of another recent study can be deduced from its title, "The Effects of Radiation on Populations," a two-part work considering (1) the effects on individuals exposed to radiation today and (2) the genetic consequences for future generations. One of many conclusions: The continued detonation of nuclear weapons in the stratosphere, at a 100-megaton-yearly rate, would result in reducing individual life expectancy by approximately 20 days.

Assisting in the creation of a stable U. S. deterrent posture is one of the major aims of OEG's research program. Permanent career positions are available to scientists and mathematicians with advanced degrees who are interested in problem-solving and want to contribute substantively to the national purpose. These positions are in Washington, D. C. Please send your inquiry to the Director, Dr. Jacinto Steinhardt.

## OEG

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## Individuals Noteworthy

(Continued from page 6)

### Faculty Notes

INSTITUTE PROFESSOR *Martin J. Buerger*, '24, is lecturing and assisting with research in crystallography at the Institute of Mathematics and Physics of the University of Chile in Santiago, under auspices of the U. S. Operations Mission to Chile. . . . Professor *Douglas M. McGregor's* book, "The Human Side of Enterprise," has won the James A. Hamilton-Hospital Administrators' Book Award. . . . Professor *Holt Ashley* has been elected a Fellow of the Institute of the Aerospace Sciences.

*Dr. Benson R. Snyder*, psychiatrist-in-chief at M.I.T., took part in a discussion of liberal arts education in America at Vassar College in January. . . . Professor *C. C. Lin* arranged a symposium on geophysical fluid dynamics for the January meeting of the American Meteorological Society in New York. . . . Professor *Walter A. Rosenblith* is to lecture on "Sensory Information and the Electrical Activity of the Brain" at the Weizmann Institute of Science in April.

## Sloan Research Fellows

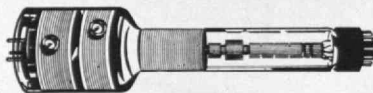
FIVE MEMBERS of the M.I.T. Faculty have received unrestricted two-year basic research grants from the Alfred P. Sloan Foundation. They are *F. Albert Cotton*, Professor of Chemistry; *Louis N. Howard* and *Franklin P. Peterson*, Associate Professors of Mathematics; *Gian-Carlo Rota*, Assistant Professor of Mathematics; and *Dietmar Seyferth*, Assistant Professor of Chemistry.

In the next academic year, the Foundation will support research of 154 scientists in this way because of the belief of its president, Alfred P. Sloan, Jr., '95, that "creative thinking—a most important 'product' in our society—cannot be put on a production schedule."

### Journal Editor

HERBERT P. GALLIHER, Associate Director of the M.I.T. Operations Research Center, is editor of *International Abstracts in Operations Research*, a quarterly published by the Operations Research Society of America for the International Federation of Operations Research Societies. Dr. Galliher has arranged for societies in 11 countries to contribute reviews to the journal through a board of editors. The new journal is being aided by the National Science Foundation, but is expected to become self-supporting.

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## Where did yesterday go?

That's the big trouble with college reunions. They bring home the fact that time passes awfully fast!

Let's look ahead.

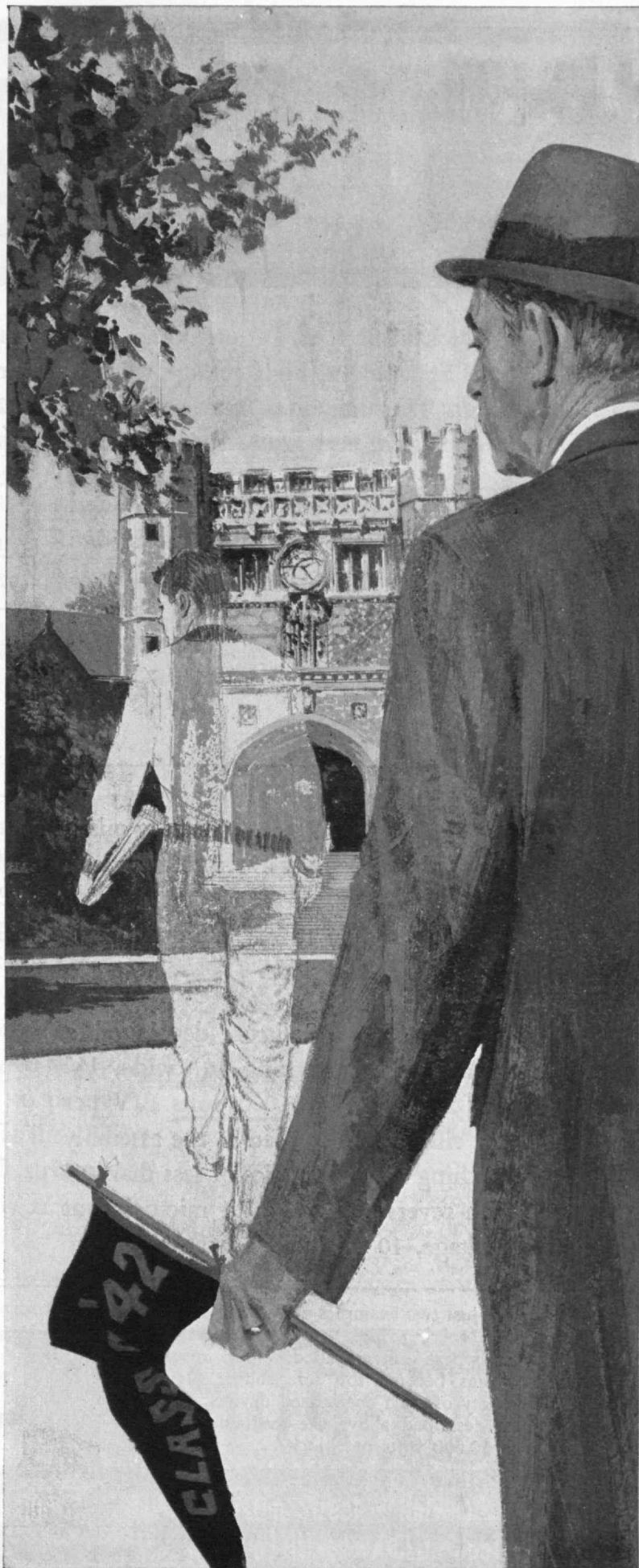
As a husband and father you can look ahead with greater confidence once you have talked life insurance with a Connecticut Mutual Life man. Reason: A CML man can tell you how much and what kind of life insurance will provide *exactly what you want* for your wife and children. He'll ask *you* what you and your family need, and when, and then recommend a plan to provide the funds. This skilled professional work he does without cost or obligation.

Many a client of a CML agent has been delighted at what was done to *stretch* his present life insurance, to make it provide *more money* for the right purposes at the right times *without increasing the cost one cent!* Why not call on a CML man for this service?

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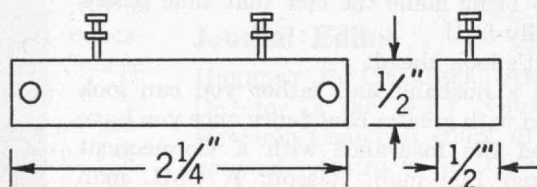


# How Solitron solved it!

*Actual case histories of significant advances in miniature high voltage silicon rectifier assemblies*

**Problem #1:** A leading radar manufacturer asked us to design a miniature, lightweight, high voltage silicon power supply for an airborne radar application. The unit must have unlimited life, 20,000 G acceleration, 75,000 ft. altitude operation, and 12,000 volts DC with output at 1.1 amps at 100°C.

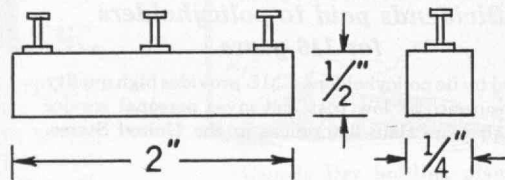
**Solution:** Solitron designed and built a 6-element, 3-phase, full-wave bridge silicon high voltage assembly. Each was corona-free and weighed less than 15 grams; each was rated at 15 KV PIV and 1.1 amps; each measured  $2\frac{1}{4}$ " long by  $\frac{1}{2}$ " wide by  $\frac{1}{2}$ " deep.



FILE #A520

**Problem #2:** A leading missile contractor required a miniature, high frequency voltage doubler for electrostatic gyro application. 5,000 volts DC output was required at an operating frequency of 265 KC; reverse leakage of the assembly had to be 1 microamp at 25°C. And the entire assembly had to withstand high shock and acceleration conditions.

**Solution:** Solitron developed a doubler assembly measuring  $\frac{1}{4}$ " wide,  $\frac{1}{2}$ " high and 2" long with 8,000 volts PIV per leg. The silicon diodes used in the assembly had switching characteristics of less than 0.5  $\mu$ sec with reverse leakage of 1 microamp at rated voltage, 10 microamps at 100°C.



FILE #A521

Above are just two examples of Solitron's wide success in solving high voltage solid state problems where others failed. As a result, Solitron has become the sole source for a wide variety of such specialized devices. The products described above are available from 1,600 to 50,000 volts per block.

**Write today for complete information**

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DEVICES, INC.

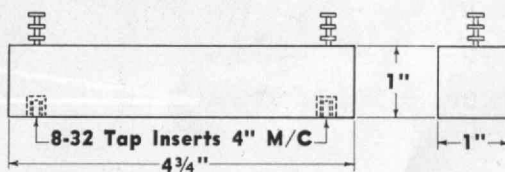
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PO 8-3770 • TWX-CLOS 863

# How Solitron solved it!

*Actual case histories of significant advances in miniature high voltage silicon rectifier assemblies*

**Problem #3:** The communications group of a well-known military equipment manufacturer found that the silicon rectifier bridge in a single sideband transceiver was acting as a fuse under load short conditions before circuit-breaker drop-out. They asked if we could supply a unit in the same size, which would not fail when subjected to 100 Amp surge currents.

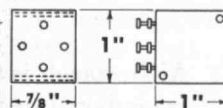
**Solution:** Solitron supplied a single phase full-wave bridge, each leg of which was rated at 6000 PIV - 2.5 Amps, in a package 1" x 4 $\frac{3}{4}$ " x 1". The drop-out time of the breaker under worst-case conditions was 30ms; during which time our unit can withstand a 200 Amp surge.



FILE #A522

**Problem #4:** We were asked by the Controls Division of a large, multi-plant equipment manufacturer if we could build a reliable bridge for a 1600 volt peak at 2KC square wave input. The package size had to be 7/8" x 1" x 1", and included 4 resistors across the output.

**Solution:** Solitron designed and built a single phase full-wave bridge with a 2400 PIV rating, which was able to deliver 200ma DC recurrent peak current at the 2KC frequency. The assembly met the stringent environmental requirements of this airborne missile application.



FILE #A523

Above are just two examples of Solitron's wide success in solving high voltage solid state problems where others failed. As a result, Solitron has become the sole source for a wide variety of such specialized devices. The products described above are available from 1,600 to 50,000 volts per block.

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# thrust deflection

# through fluid secondary injection

*Photo of test conducted at AiResearch*

AiResearch is now conducting laboratory tests utilizing various fluids in secondary injection systems for missile thrust vector control.

These tests show many advantages over present vectoring methods; faster response, moving parts are virtually eliminated, and high temperature problems are minimized. In addition, the average vectoring system weight is less as the fluid is expended at burn-out.

AiResearch, with many years of experience in systems management, research and production in the components involved, is prepared to help solve your steering and vector control problems. Direct requests for information to the Los Angeles division.



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# Trend Of Affairs



## M.I.T. Summer Programs

CURRENT INTERESTS of M.I.T.'s Faculty often are indicated by special summer programs. Eleven of the 29 to be given this year deal with new topics, and several of the others have been revised. Listed here are the 11 new ones with names of some of the Faculty participants and dates:

*Behavior of Soil under Dynamic Loadings.* Excavation by nuclear explosives, stabilities of slopes during earthquake loading, and modern research into stress transmission through clay-water systems are among the matters to be considered. (Robert V. Whitman, '49, Aug. 27-Sept. 7.)

*Modern Methods in Construction Control.* As all kinds of construction operations become larger and more complex, powerful methods of analysis are needed. Principles involved in such methods will be presented. (Albert G. H. Dietz, '32, and John L. Cutcliffe, '59, June 18-22.)

*Metallurgy in Iron and Steelmaking.* The aim will be to help engineers become more conversant with essential principles of processes employed in a technology undergoing major changes. (John Chipman, John F. Elliott, '49, and Thomas B. King, July 9-20.)

*Planning Industrial Expansion.* Open areas on peripheries of cities continue to attract industry, laboratories, shopping centers, etc. What about their location, siting, financing, promotion, administration, and design? (Albert Bush-Brown, July 9-13.)

*Stochastic Models: Theory and Application.* Uses of probability to analyze complex systems in the physical,

life, and social sciences will be dealt with in this course, planned for men concerned with memoryless random processes. (Ronald A. Howard, '55, Sept. 4-8.)

*Structure of Materials.* Techniques for describing crystalline configurations—including the use of a binary algebra and crystal modules—will be presented for metallurgical and solid-state engineers. (Arthur L. Loeb, George W. Pearsall, June 12-22.)

*Varactor Applications.* Varactors are semiconductors developed within the last decade (the name is alphabet soup for "variable reactance"). They are reverse-biased p-n junction diodes that can be used in frequency multipliers or low-noise parametric amplifiers. They are of interest to radar engineers, radio astronomers, builders of telemetry systems, and others concerned with miniaturization and improvement of communication devices. (Robert P. Rafuse, '57, Aug. 13-24.)

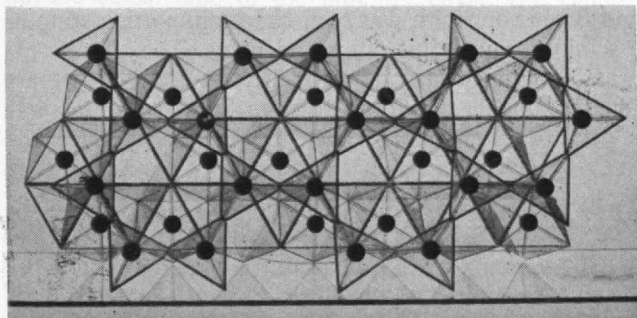
*Optical Masers.* Rapid progress in this new field calls for a synthesis of concepts and techniques already in use. This program will deal with the theoretical bases of stimulated emission devices and the state of the art of continuous and pulsed-wave generation. (Perry A. Miles, June 18-29.)

*Radio Astronomy.* No prior knowledge of astronomy or astrophysics will be assumed in this program dealing with techniques and results of radio observations. There will be field trips to nearby installations. (A'an H. Barrett, July 23-Aug. 3.)

*Biological Servomechanisms.* The general theory of dynamic feed-back systems will be considered first, then the problem of modeling biological systems and interpreting their behavior. (Leonard A. Gould, '48, and Lawrence Stark, July 9-20.)

*Theory of Signal Detection by Human Observers.* Developments in statistical decision theory and ideal-observer theory have made possible a general theory of signal detection and identification. Application of the theory illuminates a number of problems in perception, which will be considered for those interested in psychophysics and design of man-machine systems. (John A. Swets, July 30-Aug. 3.)

(Other M.I.T. summer courses of possible interest to Alumni are listed on the next page.)



These are modulated crystal modules arranged to show kaolinite's structure in Professor Loeb's materials research.

Shown at the top of the page is one of many varactor frequency multipliers built in Professor Rafuse's laboratory.



## This Summer at M.I.T. (Cont'd.)

EIGHTEEN PROGRAMS, in addition to the 11 listed on the preceding page, will be offered for Alumni and others at the Institute this summer. The titles follow:

*Properties of Polymeric Materials*, Frederick J. McGarry, '50, and Alan S. Michaels, '44, June 18-22.

*Adhesion and Reinforcement of Polymeric Materials*, Alan S. Michaels, '44, and Frederick J. McGarry, '50, June 25-29.

*Industrial Photoelasticity*, William M. Murray, '33, June 18-22.

*Fundamentals of Strain Gage Techniques*, William M. Murray, '33, and Jerome Catz, '54, July 9-13.

*Applications of Strain Gage Techniques*, William M. Murray, '33, and Jerome Catz, '54, July 16-20.

*Nondestructive Testing*, William M. Murray, '33, June 25-29.

*Experimental Techniques*, Nathan H. Cook, '50, June 12-22.

*Modern Developments in Heat Transfer*, Warren M. Rohsenow, June 25-July 6.

*Fluid Power Control*, J. Lowen Shearer, '50, June 18-29.

*City and Regional Planning*, Frederick J. Adams (dates to be decided).

*Infrared Spectroscopy: Technique*, Dana W. Mayo, '52, Aug. 6-10.

*Infrared Spectroscopy: Applications*, Dana W. Mayo, '52, Aug. 13-17.

*Techniques in High-Speed Photography*, Harold E. Edgerton, '27, July 16-20.

*Planning Marketing Strategy and Tactics*, G. Bruce Tallman, June 18-29.

*Industrial Dynamics (advanced session)*, Jay W. Forrester, '45, Aug. 27-Sept. 7.

*Probabilistic Methods in the Control of Operations*, George P. Wadsworth, '30, June 18-29.

*Air Pollution*, James M. Austin, '41, and Harrison E. Cramer, '43, July 16-20.

*Scientific and Engineering Reports*, Robert R. Rathbone, June 18-22.

Tuition for these programs ranges from \$200 to \$350. More information about any of them may be obtained from the Director of the Summer Session, Room 7-103, M.I.T., Cambridge 39, Mass.

## Australia's Radio Telescope

EDWARD G. BOWEN, a pioneer in the development of radar, described the construction of Australia's big new radio telescope, in the fifth lecture of Lincoln Laboratory's series on "The Age of Electronics." The dish of this telescope is 210 feet in diameter and it is one of the world's most refined instruments of its kind. It is now in operation, Dr. Bowen reported, and is expected to make it possible to study depths of the universe never reached before.

Dr. Bowen worked with Sir Robert Watson Watt in the 1930's, was with the Tizard Mission to the U.S., and was on the staff of the wartime M.I.T. Radiation Laboratory. He is now chief of the Division of Radio Physics of Australia's Commonwealth Scientific Industrial Research Organization.

The radio telescope his division has built 200 miles west of Sydney is the largest in the Southern Hemisphere. Vannevar Bush, '16, helped interest American foundations in assisting the Australian government with this project.

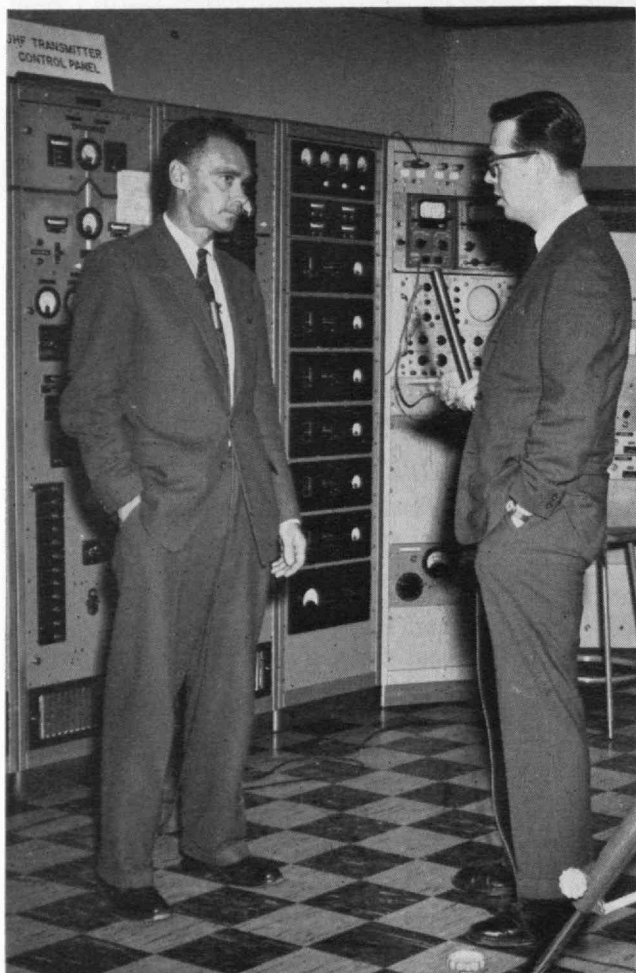
## M.I.T. on TV

JOHN T. FITCH, '52, a staff announcer for WHDH in Boston for many years, became the M.I.T. Science Reporter on the educational television station WGBH in January. Mr. Fitch's first program in the series was recorded on video tape with new mobile equipment at Lincoln Laboratory, and dealt with the operation and use of large computers.

Professor Huston Smith of M.I.T., who has often appeared on educational TV programs, was the first guest of ABC-TV this winter in a new series called "Meet the Professor." This program, too, was tape-recorded, and Professor Smith was seen lecturing, participating in a seminar, and in his office and home. The whole program was taped in a day, which took considerable arranging, but the result in Professor Smith's opinion was a decided improvement over the customary interview in a single locale.

## For Parents and Alumni

M.I.T. students will be hosts to their parents on April 28 and 29, and June 11 will be Alumni Day. Programs being planned for both occasions will help familiarize oldsters with recent educational innovations and current academic activities.



Edward Bowen (left) with John T. Fitch, '52, on WGBH-TV.

## An Atmospheric Research Center

PROBLEMS of the atmosphere are about to be attacked, at the new National Center for Atmospheric Research in Colorado, on a scale more commensurate with their global nature and importance than has been possible heretofore. The problems to be emphasized will be those that require extensive and special facilities, or are too large to be coped with properly by a single university department. Such problems will be attacked by a staff of astronomers, physicists, mathematicians, chemists, and engineers, as well as meteorologists.

M.I.T. is one of 14 members of the University Corporation for Atmospheric Research which is operating this Center for the National Science Foundation. Professor Henry G. Houghton, '27, is chairman of the board of this nonprofit corporation, and Vice-president Carl F. Floe, '35, of M.I.T., is a member of its board. Thomas F. Malone, '46, was the principal speaker at the celebration of the establishment of the Center last December 12 in Boulder. Philip D. Thompson, '53, is the Center's associate director, and the architect of the permanent quarters to be built for it is I. M. Pei, '40.

Walter Orr Roberts, the developer of the solar coronagraph, is the new Center's director, and the High Altitude Observatory at Climax and Boulder, Colo., which he created and has guided for several years, has been merged with the University Corporation for Atmospheric Research. The Center now occupies quarters leased from the University of Colorado in Boulder, but the state has provided a 600-acre site adjacent to the Boulder Laboratories of the National Bureau of Standards for its permanent home. This site includes Table Mountain, a mesa of some 60 acres about 600 feet above the general level of Boulder.

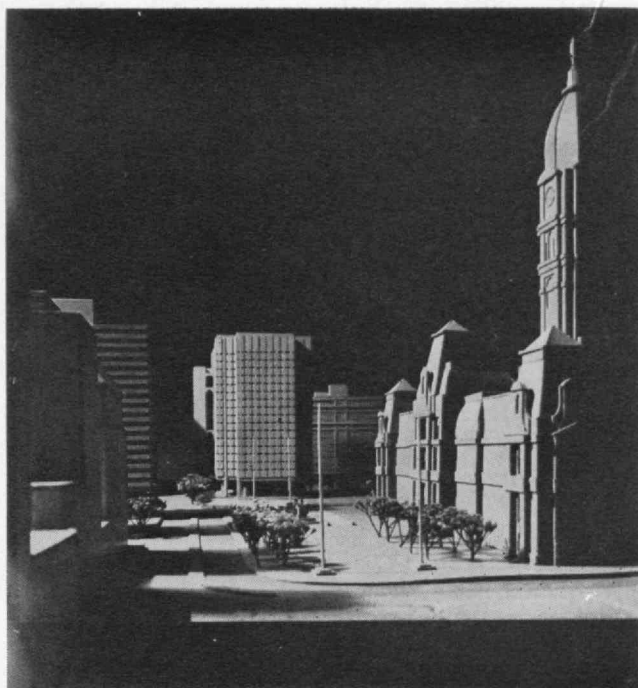
The Center is open to all competent scientists of the U.S. and other countries on an equal basis. Graduate thesis work will be done there, a program for post-doctoral fellows is planned, and the visiting staff will normally be as large as the permanent staff.

## Biophysics: Wet and Dry

INSTITUTE PROFESSOR Francis O. Schmitt, in a recent lecture at Northwestern University, discussed two approaches to the study of living systems: One, which he called "wet," refers to molecular biology. The other, which he called "dry," is used to study over-all systems with such tools as advanced electrical theory, mathematics, and computers.

"Wet" biophysicists, he noted, often are concerned with macromolecules such as are found in protein and nucleic acids. One of the latter is DNA, the genetic core of life, about which much is being learned. "Dry" biophysicists, on the other hand, have such engineering feats to their credit as the "heart pacemaker" which at times may keep a person alive, an electrical device which has enabled others to walk, and the monitoring of the physical conditions of an astronaut.

Biophysicists of all humidities, he declared, face more thrilling challenges now than ever before, and should be brought together from their scattered locations in the various departments of American universities. Well-planned, interdisciplinary research centers, he said, can have the fruitful vigor that is usually associated with hybrids.



Municipal Services Building for the city of Philadelphia.

## Architectural Honors

THE FIRST DESIGN AWARD in *Progressive Architecture's* annual competition has gone to Vincent G. Kling, '41, of Philadelphia, whose work in the last 15 years has won more than 80 national and local awards. This one was for the design of the Municipal Services Building for Philadelphia. It will have a 16-story tower occupying only a fourth of the site on a block northwest of the present City Hall and the adjoining Penn Center Development. The jurors praised the community as well as the architect for devoting so much space to the building.

Mr. Kling has been the architect for more than 800 projects valued at more than \$250,000,000, and his office is ranked among the country's 50 largest architectural firms.

## M.I.T.'s Studious Employees

SINCE 1960 when M.I.T. introduced a tuition assistance plan for its employees, 404 of them have taken advantage of it to continue their education. More have taken work at Northeastern University and its Lincoln Institute than anywhere else. Currently nine are candidates for master's degrees and 50 for bachelor's degrees, although this is not essential to participation.

Attendance and study are outside of regular working hours. Eligible to participate are about 4,100 nonprofessional employees—supervisory, office, technical, and service. Under the plan, M.I.T. pays the first \$20 of tuition in any year, plus one-half of the remainder, up to a maximum of \$200 in a calendar year.

## Building Contracts Awarded

M.I.T. has contracted with the Turner Construction Company for the erection of its 20-story Center for Earth Sciences, and with the Wexler Construction Company for five apartment buildings to house married students. Both projects are due to be completed in 1963.



## The 7090 Is Welcomed

THE International Business Machines Corporation completed the installation of an IBM 7090 data-processing system at the M.I.T. Computation Center this winter for the use of the Institute and other New England schools. The 7090 is an all-transistor machine valued at \$4,500,000, and much faster than the IBM 709 which it has replaced.

The new machine occupies only about half as much space as its predecessor, yet accommodates 19 rather than 13 magnetic tape units. It can perform additions or subtractions at an average rate of 229,000 per second, multiplications at 39,500 per second, and divisions at 32,700 per second. Its use is to be facilitated by two smaller IBM 1401 computer systems having a printing unit capable of converting data from magnetic tape at a rate of 600 lines per minute.

The expanded computing facilities at the Institute reflect the increasing demand for computer time. This has resulted from the increasing skill in computation techniques of the students and faculties of the Computation Center's co-operating colleges. There were 12 participating schools when the center was established in 1956 and there are now 39, of which 19 have either acquired or ordered computers of their own.

Activity at the M.I.T. center reached a peak in the first half of 1961, and computer usage last year was equivalent to that during the center's first three years of operation. By next fall, more than 1,000 students a year are expected to be having direct contact with the equipment via some regular class in which they have registered, in addition to 300 or more students per year who will be using the machine for thesis research.

To hail the installation of the 7090, the center and IBM sponsored a public conference in January on "The Future of Large-Scale Computing in Universities." Professor Philip M. Morse, Director of the center, presided and the speakers included Willis H. Ware, '42, of the Rand Corporation, who described a time-shared computer use plan, and J. C. R. Licklider of Bolt, Beranek and Newman, Inc., of Cambridge, who discussed human and machine communication.

Much of the discussion dealt with plans for remote consoles to permit a large number of persons to use a big central computing facility simultaneously. Ronald A. Howard, '55, Assistant Professor of Electrical Engineering and Industrial Management, dealt with the use of a large computer as a teaching machine and urged further experimentation such as has been started at the Institute. Professor Charles L. Miller, '51, Head of the Department of Civil Engineering, spoke of computers as "a driving force" in engineering education. Norman A. Phillips, Associate Professor of Meteorology, described the principal uses of a big machine in his field. Alexander L. Pugh, 3d, '53, research associate in Industrial Management, listed five principal uses of computers by students of Industrial Management. Associate Professor Michael P. Barnett emphasized problems posed by the rapid growth of interest in high-speed computation, and warned the assembled educators against producing "a generation as unable to add 2 and 2 without a computer as to go from one floor of a building to another without an escalator."

## Computers as Discoverers

STANISLAW M. ULAM of the Los Alamos Scientific Laboratories, in the fourth lecture of Lincoln Laboratory's 10th anniversary series, reported that computers, because of the speed with which they can test tentative solutions and generalizations, have enhanced the value of the empirical method in mathematics. Thus, he said, they are contributing to advances in mathematics as well as in sciences lower in "the pecking order."

The computer, he emphasized, is a tool. He expects better weather predictions to result from computer studies of atmospheric phenomena. Its increasing versatility, he indicated, makes it helpful to the life scientists, too; and he expects to see methods devised to use computers effectively to teach mathematical subjects.

Dr. Ulam is noted for initiating the Monte Carlo method for the statistical treatment of mathematical and physical problems that are too complex for conventional analysis.



The Computation Center's Associate Director F. J. Corbato, '56, beside the IBM 7090's console in the Compton Building.

# Laboratory Work for Engineers

*M.I.T.'s aeronautics students decide what to measure, how to do it, interpret results, and draw conclusions in these new courses*



SUPPORTED by the Ford Foundation grant to M.I.T., the Aeronautics and Astronautics Department has started two new laboratory courses for juniors and seniors. A student selects a project in the beginning of a semester and stays with it for the rest of the term. Two students may work together, but not three since it has been found that a third man rarely contributes much.

The purpose of the course is to give students an opportunity to learn about experimentation as a method of inquiry. Each project, therefore, poses a question, the answer to which is to be found in the laboratory. In addition to having to select a project, a student has to decide what to measure. He then must choose or design and build the apparatus to be used, perform the measurements, interpret the results, and draw conclusions.

Once a week there is a research conference during which students report to the class on their progress with their problems. A lab report is required at the end of the term. It may be short and refer to the lab notebook for detailed description. This provides an incentive for concise writing and good record-keeping.

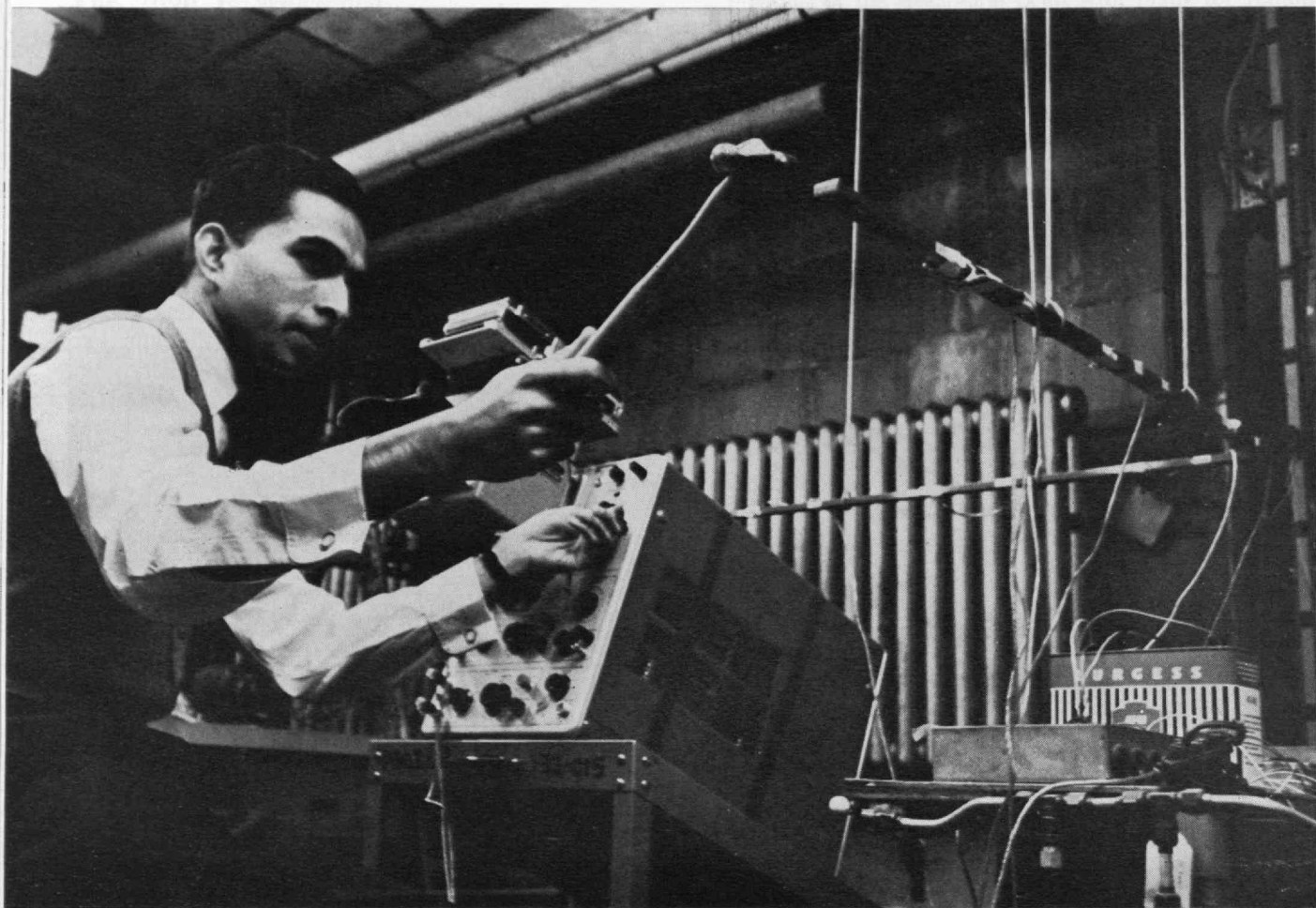


**JOHN E. GIBBONS, JR., '62, of Hyde Park, Mass., built a wind tunnel to study vortex bursting in swirl flow. His was a problem in hydrodynamic stability, tackled to gain understanding of flow over swept wings at high angles of incidence, such as occurs when a plane lands. One vacuum cleaner powered his tunnel, another his smoke generator, and he used a hot-wire anemometer for flow observation. Half-gallon cans were part of his two-fluid manometer.**

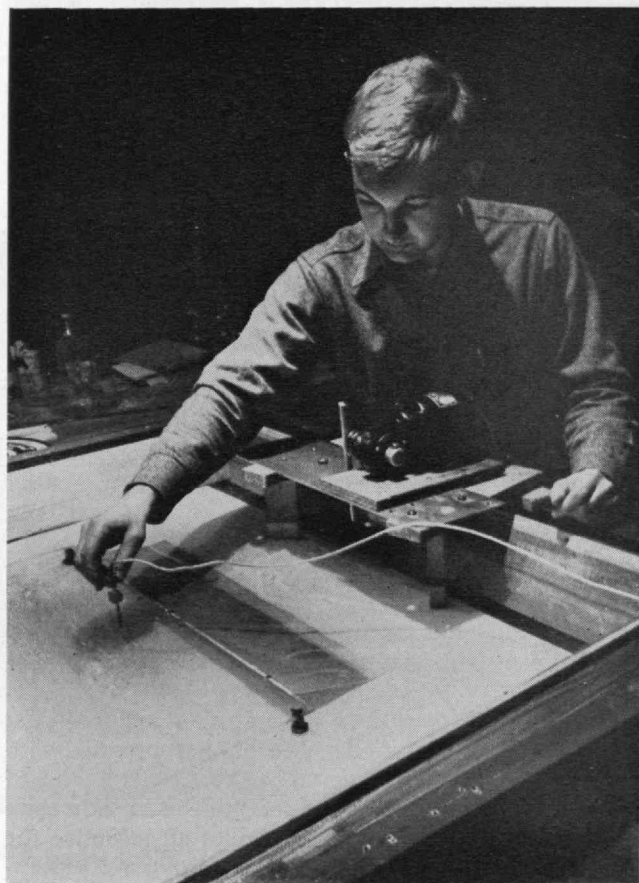
In pursuing these investigations, students unavoidably pick up incidental information, often concerning the principle that if things do not behave as you think they should, there is usually a reason for it. Efforts are made to avoid excessive frustration, and most students enjoy the course, as do the instructors.

The Faculty involved has included Joseph Bicknell, '34, Walter McKay, '34, Erik L. Mollo-Christensen, '48, Judson R. Baron, '48, Theodore H. Pian, '44, Gordon C. Oates, Myron A. Hoffman, '51, Yao T. Li, '38, Jack L. Kerrebrock, Robert K. Mueller, '32, James W. Mar, '41, and Winston R. Markey, '51.





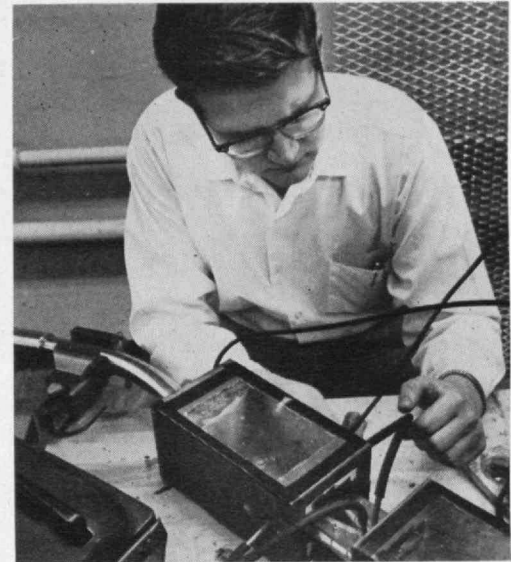
**DURGA S. P. VARANASI, G**, of Andhra Pradesh, India, used two bars welded together at a 90-degree angle to study stress waves such as might be induced in the structure of a vehicle struck by meteorites. At the junction of different members of a built-up structure, the waves would be partially reflected and partially transmitted to neighboring members. He is seen above producing a longitudinal stress wave by hitting the end of a bar with a hammer. He used electric wire strain gauges and an oscilloscope to detect the longitudinal and transverse waves that such blows produced in the suspended bars.



**BROR O. HULTGREN, JR., '62**, of Mohnton, Pa., studied free surface waves in a tank of water. His capacitance depth gauge is on the left and the wave generator under the motor, in the photograph at the right.

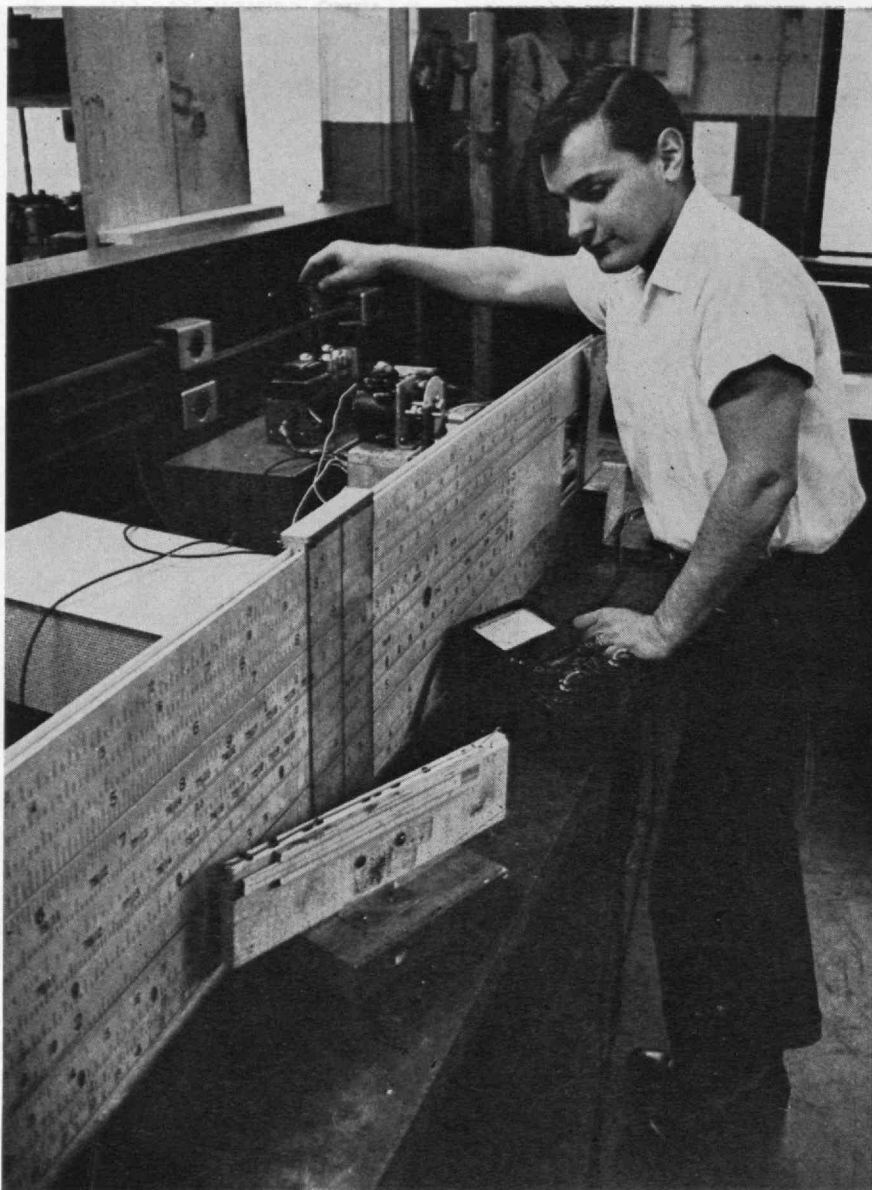


**DAVID J. COKER, '62**, of Somerville, Mass., measured the speed of shock waves in argon. He used the shock tube at left and observed ionization fronts with a photomultiplier recording system, which he designed and built. His was a problem faced by re-entry vehicle designers and in studies of the more general problem of non-equilibrium thermodynamics of ionized gases.



**JERRY L. McAFEE, '62**, of Kirkwood, N.J., studied bistable flow in ducts. If reliably controlled, a bistable flow can be used as a pneumatic relay. McAfee will continue the work for his thesis and plans to build a pneumatic relay computer.

**ALL OF THESE PHOTOS** were taken in a single afternoon in the new laboratory of the Department of Aeronautics and Astronautics at the Institute. George Woodruff, the photographer, made them while students went about their work near the end of the term.



**RONALD PASQUALINI, '62**, of Brooklyn, and **PHILIP F. HUDOCK, '62**, of Hazelton, Pa., were this year's biggest slide-rule operators at M.I.T. Remote drives which can precisely position some large object are widely used for machine tools, radar antennas, and other industrial and military equipment. Pasqualini and Hudock learned about feed-back positioning systems by building one for a rule big enough to be seen from the rear of a lecture hall. Motors and chain drives concealed behind it move the slide and the cursor to positions corresponding to those on the small rule in the foreground. The builders reported positioning accuracy of  $1/16$ th of an inch on the large rule. Pasqualini is shown adjusting the speed and response of the cursor drive system.



**EDWARD B. FEINBERG, '62**, of Belmar, N.J., devised a height-sensing unit. A liquid column in a glass tube is still the simplest, most reliable way to measure, say, the pressure of the atmosphere. Feinberg built a refinement for a mercury barometer to give a varying signal as the column rose or fell. In his apparatus, a light beam passes through the glass tube and after being split by a mirror falls on two photoconductive cells connected in a bridge circuit. As the mercury surface moves, the light on one cell increases and that on the other decreases. Feinberg is shown at the left aligning his optical system.



# A Gamesworth of Thought

*If 100,000,000 adult Americans did only that much real reasoning a day, mankind would never be the same again*

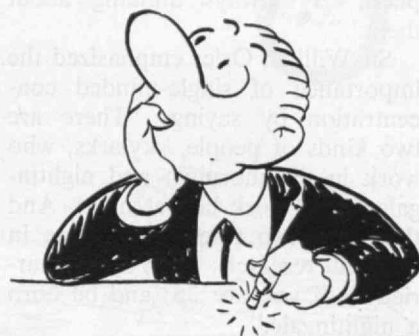
BY JOHN RADER PLATT

HOW MUCH time did you spend today in formal application of your intellectual powers, or more precisely, in analytical thought? Don't try to get out of it by asking me to define analytical, or by saying that every thought is analytical. You know, and I know, the difference between reading the paper or cleaning house or sitting in a discussion or writing letters or even giving lectures, and *thinking*. Analytical thinking is Sherlock Holmes thinking, figuring out from small clues the height of the criminal and whether he was left-handed. Have you made any large inference today from close observation? It does not require civilization. The successful tracker or hunter must think like this. It does not require mathematics. It can be found in the better organization of housekeeping, or in the artist's consideration of another way to represent a shadow. Any consecutive thought about what you do, why you do it that way, what would happen if you did it slightly differently, is analytical reasoning.

I would like to suggest the convenience of having a rough unit of analytical reasoning so that we can talk more or less quantitatively about how much good thinking is involved in this job or that. I think a good unit would be the amount of reasoning involved in a 40-move game of chess or a hard end-game problem, or a fairly hard (for you) crossword puzzle; that is, half an hour to an hour of problem-solving. This might be called "one gamesworth" of reasoning, to give it an obvious name. It is a useful unit because we are all acquainted with such problems and have a feeling for their difficulty—easily distinguished from 10-minute problems on the one hand and from three-

hour problems on the other. I also think the sequence of mental operations is fairly typical of formal thinking on complex problems, a mixture of memory, rules of procedure, deductions, analogies, inductions, evaluations, and insight, all leading to an elegant and novel solution with the loose ends tied up. Also we shall see that it is a natural unit, measuring roughly the amount of reasoning most of us can do at one sitting.

Many of us do crossword puzzles every day, but I think that few do a gamesworth of serious reasoning every day. Sherlock Holmes lived for nothing else, but most people, even creative artists and scientists, are creatures of habit and only



gamesworth of thought to their work, the world would tremble and mankind would never be the same again.

## The Two Worst Interruptions

There is nothing impossible about applying the mind in a more or less concentrated way for a good part of every day, if you set up the conditions for it; and this is the straightforward explanation given by many prominent men for their achievements. In *Men of Mathematics*, E. T. Bell quotes Gauss: "If others would but reflect on mathematical truths as deeply and continuously as I have, they would make my discoveries." And when Newton was



*think* occasionally. This is unfortunate. Our highest powers lie unfocused. Count that day lost whose low descending sun sees from thy mind no gamesworth of reasoning done. "There are some problems you cannot solve in a million years unless you think about them for five minutes," to quote a famous saying of the physicist M. L. Goldberger. If, one day, a hundred million adult Americans all gave one

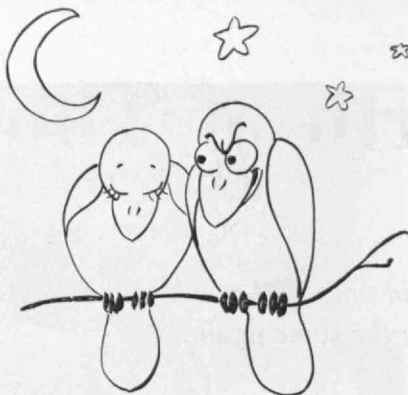
"asked how he had made discoveries in astronomy surpassing those of all his predecessors, Newton replied, 'By always thinking about them.'"

Sir William Osler emphasized the importance of single-minded concentration by saying: "There are two kinds of people, skylarks, who work in the morning, and nightingales, who work late at night. And there are two rules for success in medical research: Don't get married until you are 35; and be born a nightingale."

In short, avoid the two worst interruptions, Families and Other People. Every field has its folklore about the success of the nightingales. Maybe they are born so, maybe not. But much of their secret must be that they are ready to do analytical reasoning at a time of minimum external distraction, while the more conventional skylarks are trying to think at a time of maximum distraction. The seduction of the mind to think obeys the old formula for other types of seduction: Find the place and the time, and the rest will take care of itself.

### The Maximum for Many

Actually I believe that the time need not be very long, that no one really spends a whole working day every day in the kind of intense analysis I am talking about. In the purest mathematics there is much routine operation to be carried out; and I suspect that the chess wizard who plays all day long is dealing most of the time with familiar situations. Probably the brain, like the rest of our physiology, is designed



for maximum power output in short bursts only. The tiger sprints away, but he tires quickly and the trained horse can easily run him down. We eat for an hour, hear a lecture or a play or a concert for no more than an hour or two or three. Patience and interest flag. In some sense the brain is indeed tired. I suggest that in concentrated analytical thought, one or two gamesworth every day would be about the maximum for most of us. This much actual thought—a couple of crossword puzzles' worth—is not so distressing to contemplate, is it? This principle is often neglected in the long hours and numerous courses of our schools.

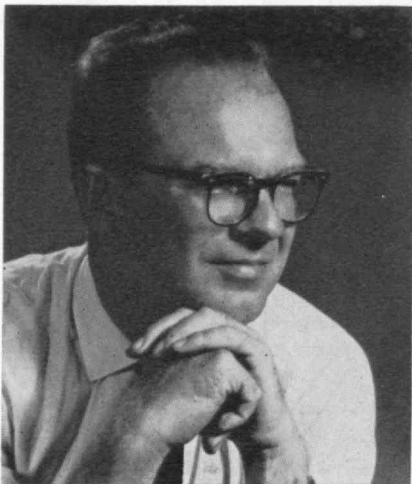
We can confirm this rough upper limit by looking at the output of the most prolific men. Jefferson's writings fill 50 volumes, say one per adult year. Benjamin Franklin, that "printer, statesman, writer, seller of books, philosopher, civic leader, linguist, inventor (of bifocal spectacles, a harmonica, a stove, among other things), scientific experimenter, superb autobiographer, tireless correspondent and postal-system innovator," had a similar output. At their peak, Shakespeare and Shaw produced two or more plays per year; Dickens and Scott, one or two

novels per year. John Dickson Carr and Simenon, today's high-speed writers of detective novels, turn out four to 10 per year. Mozart produced an opus every week or two. Euler produced over 1,000 pages per year, largely algorithms; his manuscripts fill a museum room and have scarcely begun to be examined. Kelvin turned out 600 scientific papers, roughly one a month. Today the astronomers, with their numerous stars, and the chemists, with their numerous molecules—and their numerous student assistants—occasionally match this rate.

For this kind of literary and semi-literary activity, the maximum rates then seem to be in the range of 200 to 1,000 pages per year, averaging steadily about one page per day, within a small factor. Much of each page is of course grammar rather than ideas, and I would guess that this output represents of the order of one or two gamesworth of chesslike reasoning per day, say 30 to 100 moves. A man might generate 10 times as much volume with a dictating machine but scarcely 10 times as much reasoning. Averaged over the years, a tightly written page is then not far from a day's work or a natural unit of reasoning, in music or mathematics or letters. A tightly written paper or opus or chapter is evidently something like a larger natural unit of organization, which might be generated in one to four weeks of consideration and absorbed in an hour. Many of the productions of the most prolific men bear a light spontaneous stamp, and one suspects that men famous for a smaller number of works have produced at comparable rates but have revised more extensively and have been more critical about what they kept. Franklin Roosevelt is supposed to have said of Churchill that he had 100 ideas a day, four of them good; this was enough to make the difference from an ordinary man.

Some men, literary and otherwise, may try to justify a small output on the grounds of selectivity. Stephen Spender carries things to their logical conclusion when he says, "It does not matter whether genius devotes a lifetime to producing a small result if that result be immortal."

This is a stern doctrine. Evidently poets do not have to eat, as physi-

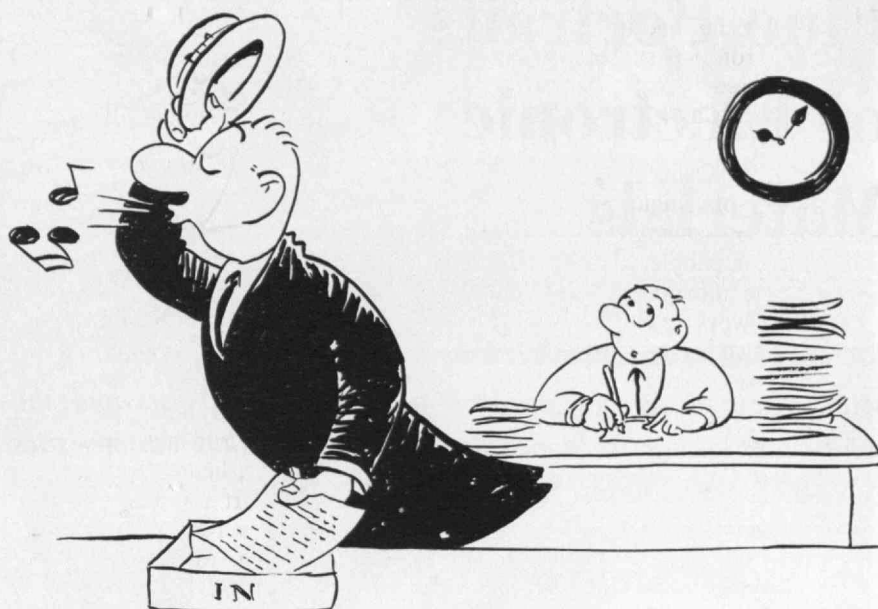


JOHN RADER PLATT entered Northwestern University when he was 14, and received his doctorate at 22. He is professor of physics at the University of Chicago and at M.I.T. this term as visiting professor of communication science. This article is an excerpt from his new book, *"The Excitement of Science"* (Houghton Mifflin, \$3.50). He has written previously for Harper's Magazine, the Bulletin of the Atomic Scientists, Horizon, The New Republic, The Saturday Review, and the Air Force Magazine and Space Digest. Henry B. Kane, '24, produced the drawings.

cists do. It also provokes the observation that the actual act of creation of the small result—immortal or otherwise—does not take a lifetime at all, but frequently only a few hours, when the moment is ripe. Schubert's best songs were written in a day, Frost's best poem in an hour, the Schrödinger equation in a weekend, and the theory of evolution by Wallace in a couple of days; Darwin's life of work was but the massive buttressing of the brief immortal idea. Who knows what immortal little result you are but two hours away from: Have you done—or revised—your page of thought today?

### What to Think About

Thought about what? you may say. You are not a Schubert or a Schrödinger. Thought cannot exist in a vacuum; it must have something to think about. Quite true. Lofty subjects or simple ones. Each person must start with his own problems; if nothing else, the funny or surprising regularities of the day that are the staples of chat. But I believe that the process, and the advantage, of applying one's mind more connectedly and formally is much the same whether the thinking is applied to children's tantrums or to rocketry. Write them down explicitly, the causes and effects, the interactions and implications, what would happen if you changed this



or that. Could mail delivery be made more efficient here? Other communications channels? What are the pros and cons of setting up an operations research group? Can I think of a definitive experiment to check the causal chain in these correlations? Is Billy's upset due to hunger or an aggressive playmate?

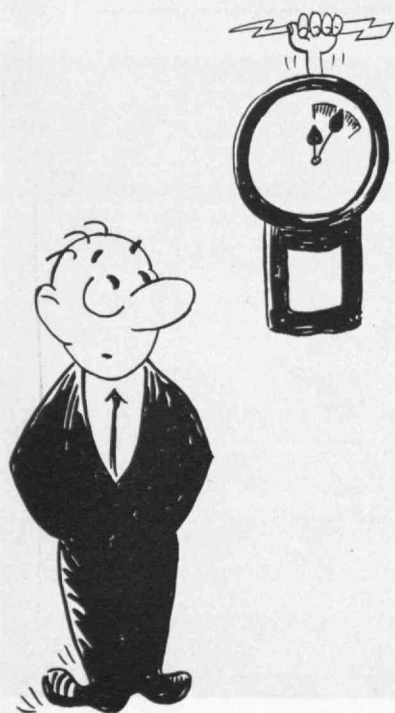
Naturally thoughts are more consequential if they are on important subjects, and on subjects you know something about; and it is better if you go on with the same subject and make a record of your thoughts day after day, so that they build up into something. But trivial ideas are fun, too—the guerrilla operations of the mind—where you get some quick objective satisfying little result and success is easy to see. Whether a serious subject or a trivial one, related to your work or outside it, give it a gamesworth of thought—all the thought it needs for an important little result—and then think how you should act on the result.

From the figures on the prolific workers and from the immortal instances, I conclude that a page or a gamesworth or two of thought every day is about the maximum; and yet that this amount is possible for everyone and even easy. We all confess it, in our enjoyment of the daily crossword puzzle. Real thinking is brief and it is fun. It has nothing to do with being a grind or a worrier or a show-off or an intense young man. But to apply this short amount of thought to our own problems and then to act on it is so rare

that the man who begins to do it systematically may soon distance competitors he has barely kept up with before. Feel no inferiority. The book you write in is your own and no one is inferior there. The daily intellectual tortoise can pass many a high-speed brain that only operates when fancy strikes.

The effort itself changes a person's outlook for the better. A gamesworth of thought takes so little time that a man who has done his hour of reasoning and has had even one idea—even a small one and still buried in the notebook—feels a sense of success and freedom for the rest of the day, or night. This alters his whole attitude toward other more routine chores and toward the practical work of translating his idea into output. He has already done his real work for the day, and the lesser problems then fall into easy perspective. First things first, and the rest will be added unto you.

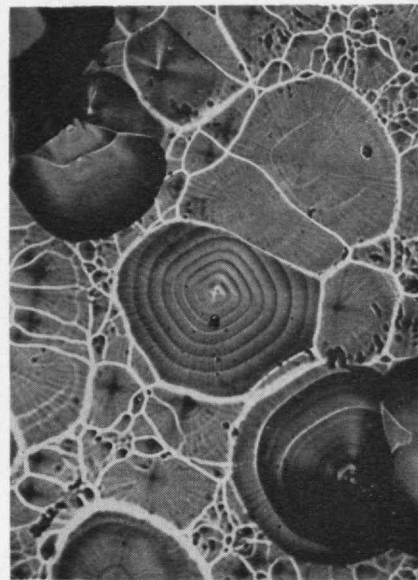
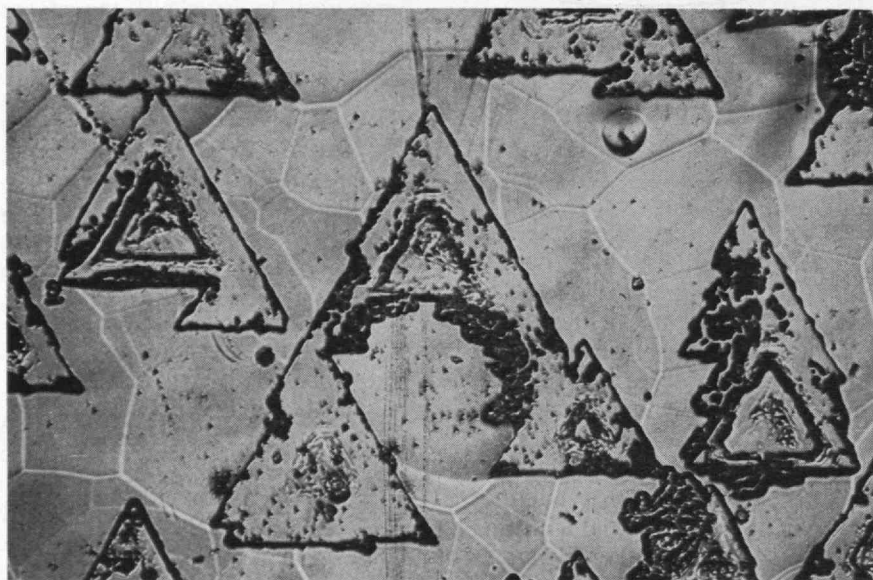
This pleasure and confidence is seductive, and makes it easy to go on with such a program—one of the motivational feedbacks. I think this is one of the secrets of the habitually relaxed attitude that prolific minds so often show. The brilliant British physicists and chemists with their short hours and long teas do not have to sweat and strive, because they have learned how to think formally. Somerset Maugham took the view that if he could not become rich and famous by writing until noon, he could not do it by writing all day either.





# Fine Portraits of Electronic Materials

*Microscopic studies of surfaces help the metallurgists and the solid state physicists concerned with the bulk characteristics*



METALLOGRAPHS such as these, made by Harry H. Ehlers of the Electronics Materials Group in Lincoln Laboratory's Solid State Division, are highly useful as well as decorative.

Some important semiconductor devices were not commercially successful until certain surface problems were solved. Characterization of surfaces continues to be important in the study of electronic materials because the bulk characteristics of the materials are often studied or exploited via the surfaces.

"Microscopy," says Harry C. Gatos, '50, Associate Head of Lincoln's Solid State Division, "provides a direct means of identifying a variety of lattice defects such as dislocations, of establishing the presence and orientation of grain, of noting

the presence of precipitates, and of examining other phenomena important in the study of electronic materials."

The pictures on this page show surfaces as seen when magnified several hundred times. The triangles above are etched figures in a germanium surface. In the upper right hand corner, you see a germanium surface etched in argon at high temperatures and below it a germanium surface that was etched in hydrogen. At the right is an etched cadmium sulfide surface.

The large photo on the next page is a film of antimony 1500 angstroms thick deposited on glass. The magnification (about 200 times) shows initial nucleation in the formation of large crystalline areas.







# Books

**THE METAL PLUTONIUM**, Edited by A. S. Coffinberry and W. N. Miner; University of Chicago Press (\$9.50). Reviewed by John Chipman, Professor of Metallurgy, M.I.T.

FIRST of the man-made elements to be put into quantity production, plutonium has a unique history which is ably recounted in this volume by the very people who made the history. Chapters of considerable historical interest describe early work in Chicago, Los Alamos, Chalk River, and at several sites in Britain and in France. Glenn Seaborg, the discoverer of plutonium, tells of its creation from uranium in the cyclotron, and of its identification as Element 94 in February, 1941. Cyril Stanley Smith, '26, writes of its early metallurgy at Los Alamos leading to the first atomic bomb in 1945.

Much of the chemistry of the element was learned from studies of microgram quantities produced in the cyclotron. When larger amounts became available in 1944 from the reactor at Oak Ridge so that one-gram and 10-gram lots of metal could be prepared, the remarkable nature of the metal began to appear.

By any standard it is a most remarkable metal. Between room temperature and its melting point, 639 degrees C., six different crystallographic forms appear which exhibit some rather amazing properties. The alpha form has a remarkably high electrical resistivity which, unlike other metals, decreases with increasing temperature. Most amazing is the large negative coefficient of expansion of the delta form.

From the researchers' viewpoint the worst characteristic of the metal is its extreme toxicity, a fault which it shares with its older cousin, radium. The smallest whiff of vapor of a plutonium compound or the finest speck of air-borne dust is a source of peril to laboratory personnel. All operations are therefore conducted inside airtight enclosures and with meticulous regard for good housekeeping.

Partly because of its six allotropic forms, but more importantly because of its toxicity and the resulting complications of laboratory technique, plutonium has been a headache to research workers. The alchemical symbol memorializes this attribute. It was designed before the metal had become involved in today's international headaches.

Part II is concerned with the manifold details of plutonium metallurgy. A most unusual property is that of self-heating. Because of the energy released by its radioactivity, a piece of plutonium tends to be at a higher temperature than its surroundings. This difference persists when the piece is heated in a furn-

ace, and in the early days this caused difficulty in exact measurement of its high-temperature properties. A solution to this problem was found by letting the specimen heat itself! Plutonium forms alloys with most of the other metals and many of these are of great interest in the design of nuclear reactors. The book is replete with useful data on these alloys.

The book contains no information on the military uses of plutonium, but Part III discusses its use in nuclear reactors, particularly in the "breeder" reactors of the future. It is possible in such reactors to produce more fuel than the amount used. The potential supply of plutonium for the long-range future is thus greater than that of  $U^{235}$  in a ratio approaching 140 to 1, the ratio of  $U^{238}$  to  $U^{235}$  in natural uranium.

Quoting from the chapter by Robert M. Kiehn, '50: "The progress of plutonium power-reactor technology now depends on the efforts and ingenuity of metallurgists and engineers to devise suitable high-temperature radiation-resistant materials, fabrication techniques, handling schemes and, most importantly, processing methods." The remaining chapters describe some of the progress that has been made along these lines.

For a book containing contributions from 43 authors, this one holds together remarkably well, a tribute to careful planning and competent editing.

## Have You Seen These Books?

RECENT publications likely to be of especial interest to M.I.T. Alumni include:

*Aerospace Telemetry*, edited by Harry L. Stiltz, contains contributions by John J. Downing, Jr., '48, and Merwin W. Williard, '55 (Prentice-Hall, \$15).

*Analysis and Design of Engineering Systems*, by Henry M. Paynter, '44, Associate Professor of Mechanical Engineering, contains Class Notes for M.I.T. Course 2.751 (The M.I.T. Press, \$10).

*The Annual Report of the Smithsonian Institution for 1960* (U.S. Government Printing Office). Among its articles are "Exploring the Solar System by Radar," by Paul E. Green, Jr., '53, and Gordon H. Pettengill, '48, of Lincoln Laboratory; "Navigation—From Canoes to Spaceships," by Charles S. Draper, '26; and "History of a Tsunami," by Elliott B. Roberts, '21.

*Design of Hydraulic Control Systems*, by Ernest E. Lewis and Hansjoerg Stern, '50, of the General Electric Company (McGraw-Hill Book Company, \$12.50).

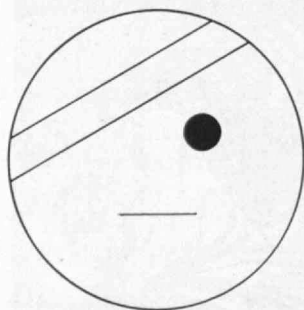
*The Internal Combustion Engine*, by C. Fayette Taylor and Edward S. Taylor, '24 (a second edition, published by International Textbook Company, Scranton, Pa.). It contains results of research at M.I.T. since 1929.

*Master Standard Data: The Economic Approach to Work Measurement*, by Richard M. Crossan, '40, and Harold W. Nance, of the Serge A. Birn Company, Louisville, Ky. (McGraw-Hill Book Company, \$7.50).

*Particle Accelerators*, by M. Stanley Livingston, Professor of Physics at M.I.T., and John P. Blewett of Brookhaven National Laboratory (McGraw-Hill Co.).

*Systematic Layout Planning*, by Richard Muther, '38, of the Plant Layout Subcommittee of the American Materials Handling Society's Committee on Integrated Materials Handling (Industrial Education Institute, 221 Columbus Avenue, Boston, \$9.50).

(Book News is continued on page 44)



Plutonium's alchemical symbol.



# New England's Special Kind of Common Market

*M.I.T.'s Chairman suggests a six-point program for further development of intellectual assets*

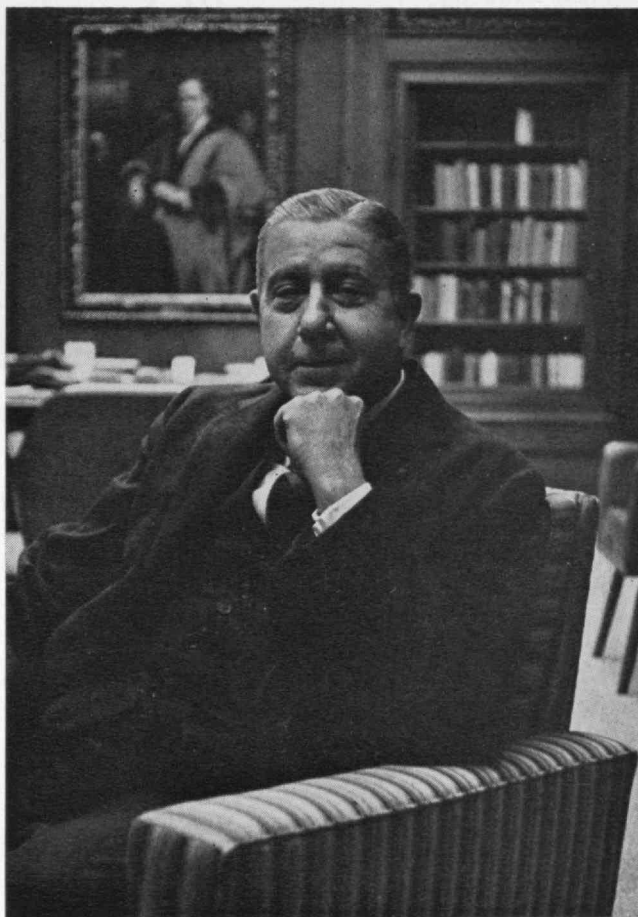
JAMES R. KILLIAN, JR., '26, Chairman of the M.I.T. Corporation, spoke at a January meeting of the New England Shoe and Leather Association in Boston about "New England's Special Kind of Common Market." He described many recent developments at the Institute which have been reported in *The Review*, and went on to suggest a six-point program by which New England could further increase its economic advantages. Excerpts from his remarks follow:

**B**ECAUSE of the way technology is evolving and because of the national application of this new technology into great co-ordinated engineering programs, we in New England must achieve a new concert of our skills—involving bankers, managers, lawyers, engineers, scientists, entrepreneurs—to find ways of handling technology having this new scale and complexity. It requires new kinds of entrepreneurship, new kinds of organization, and new forms of federated community efforts. Education or research alone cannot do what is needed. Industry cannot do it alone. There must be a concert of effort on the part of many groups.

Once, as we all know, the New England industrial economy rested primarily upon the region's textile mills. A report by the Federal Reserve Bank of Boston shows that textile mill production as late as 1947 gave work to 280,000 people in New England. By November, 1960, the figure had dropped to 110,800, approximately 60 per cent. The economic transfusion that was to replace this and earlier losses came through new enterprises, scientifically oriented and based upon work in electronics, nucleonics, and missiles and space technology.

Much of the impetus for this growth originated in the laboratories of our universities and in the great electronics war research laboratories operated in Cambridge by Harvard and M.I.T. during World War II. Further impetus has come from the establishment, since then, of such major defense-sponsored research centers as M.I.T.'s Lincoln Laboratory, the Research Laboratory of Electronics, and the Instrumentation Laboratory. If the universities have contributed to the industrial development of our community and region, they, in turn, have benefited from this development. The growth of science-based industry and of industrial research has helped to achieve a professional community of sufficient size, variety, and richness of talents to raise the level of stimulation and attraction for all scientists and engineers who work here, both in industry and in education.

The three-way combination of research facilities—the laboratories of professional consultants, of educational



**Dr. Killian as seen by the camera of Simpson Kalisher.**

institutions, and of individual firms—has built up a large reservoir of special talents and technical skills which is focused constantly on the future. The personnel of these agencies are drawn together by common interests and intermingle freely, with a corresponding cross-fertilization of ideas.

Since the end of World War II, 400-odd new science-oriented enterprises have been started in metropolitan Boston and I am proud to say that over 70 of them have been organized as the result of M.I.T. research or by M.I.T. personnel. Each week seems to witness the formation of research and development laboratories which seem to breed and grow in bewildering profusion in this intellectual climate. Housed in low-slung, angular buildings, clinging to the hilly New England countryside and frequently bearing fanciful, futuristic names, they strike

a strange and invigorating note in a region where old colonial homes and names linger on.

Skeptics do point out that this phenomenal growth of science-oriented industry is based primarily on defense spending and as such is dangerous ground upon which to build an economy. Massachusetts is currently receiving approximately \$1.5 billion in defense contracts annually and 150,000 people, or one in every 14, now are employed under defense contracts.

Yet we must be deeply aware that the frontiers of technology today are to a very great extent to be found in military developments. By operating on this frontier we have the opportunity to be at the forefront of technology and to be in a position of readiness to apply this new technology to desirable and appropriate peacetime industry. Our heavy involvement in military research and development thus puts us in a position of advantage. Have we the entrepreneurship to exploit it, while at the same time enabling us to make a vital contribution to the national safety and welfare?

Let me now suggest some goals and opportunities for New England. I suggest a six-point program, built around the greater utilization of our intellectual resources and a further increase in our already high productivity of ideas.

*First*, we need systematically to build the size and quality of our community of scientific, engineering, and managerial man power. First-rate people attract first-rate people. By facilitating the process of creating new science-based companies, by making sure that our state taxes, our laws, and other aspects of the governmental environment do not inhibit existing or new companies in their growth, and by constantly building our research resources, instrumentalities, and institutions we can continue to build a community of advanced skills, both intellectual and manual, which will multiply and give us ever-growing strength. Our policy in government, in institutions, in all our community planning must be one of maintaining the quality of our personnel, and of providing those environmental attractions, physical, intellectual, aesthetic, which will attract and hold the world's best talent. The story is told that one company, now with a major center in Massachusetts, gave a green light to its research leader to select any spot in the country for the new center. "I chose Boston," he said, "because it has the most intellectually alert climate in the nation." This is the kind of reputation we want more of.

*Second*, if we are to do this, our education must be the best. Every Board of Education and every institution, both public and private, must be driving hard to have the best. This is essential for our individual dignity and growth, for our spiritual welfare and for the attractiveness of our environment to the first-rate people we want to hold and attract. It is also essential for our economic strength and growth. More and more we recognize that education is a major factor in economic growth; that the economic battles our nation faces may be won in our classrooms, where the intellectual and other skills are generated for our complex society. More and more it is realized that U.S. economic growth has largely depended upon advancing technology and that an advancing technology depends upon research and education, upon capital formation through education.

Nationally we are today facing a growingly acute shortage of technical man power, and we in New England need to be concerned with what we can do about

it—both for the nation's and our own good. Two recent estimates point up the crises: 1) Over a long period of time the average increase in technical man power has been 6 per cent a year. Since 1957, the year of Sputnik, the increase in federal research and development funds expenditures has been 35 per cent to 40 per cent a year; 2) Since 1950 our operating budget in the United States has grown fivefold. In the same period the number of Ph.D.'s in science and engineering has only doubled (45,000 to 87,000). In short, the number of dollars being spent for research and development has gone up faster than the number of people engaged in such work.

Currently we see puzzling decreases in the number of young people who seek to study certain fields of science and technology. In 1949, there were 27,000 applicants to the nation's medical schools. In 1960, less than 20,000 applied. Equally distressing is an approaching national shortage of engineers. A survey of engineering enrollments shows that the number of engineering students preparing for careers in engineering is declining, not only in absolute figures but also in proportion to the college population. The total freshman engineering enrollment is down for the fifth straight year, having dropped from 60,132 last year to 58,749 this year.

At the present rate the Soviet Union is outproducing the United States in engineering man power at a rate considerably above three to one.

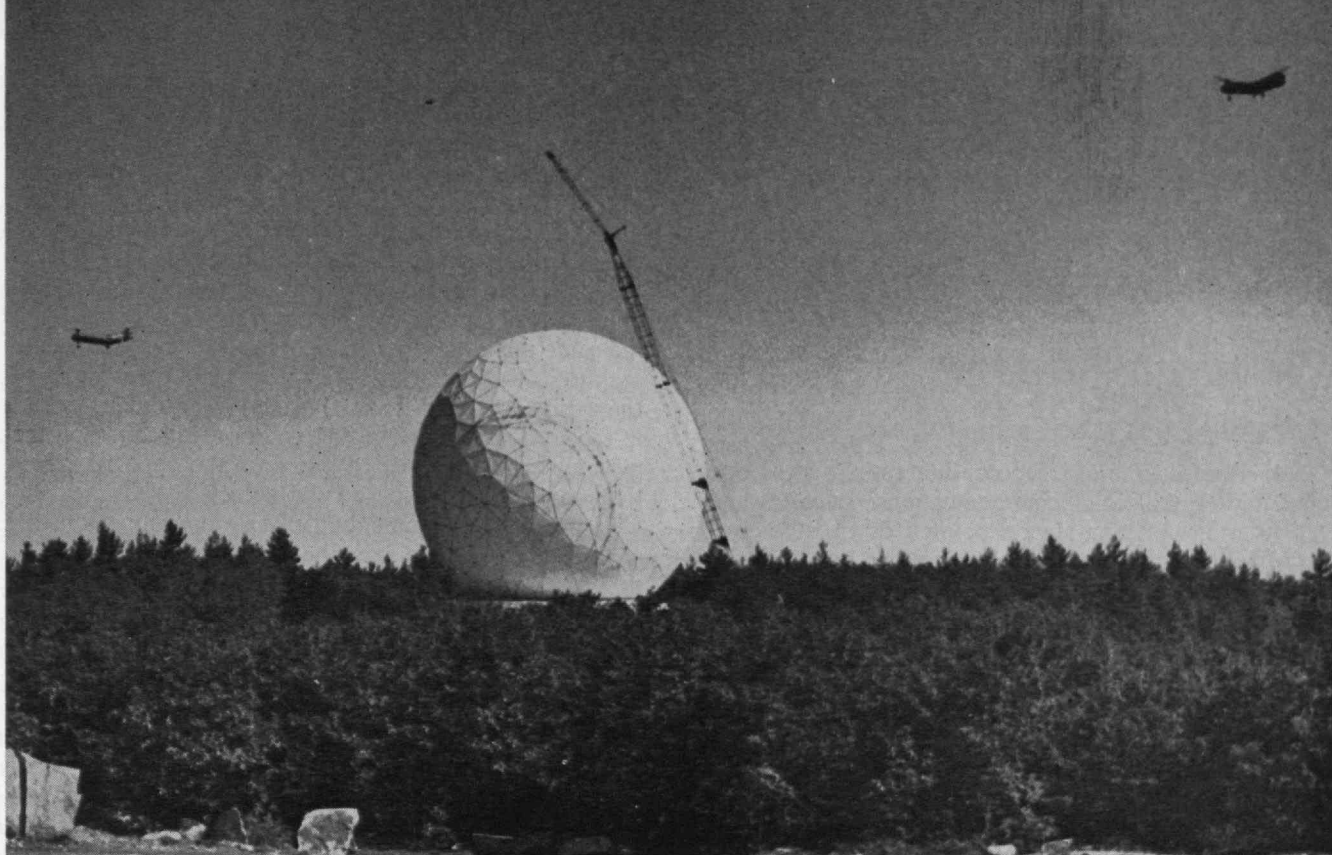
In sharp contrast to the supply of our engineers is the demand both actual and predicted. The most recent estimate by the National Science Foundation puts the annual demand for engineers for the remainder of the decade at 81,000 which is considerably more than twice the number now being turned out. It behooves all of us educators, parents, and laymen alike to face squarely the declining enrollments and stand ready to work with secondary school personnel in meeting the problem.

*Third*, New England should be seeking to pace the nation in the quality and quantity of its industrial research. Our amount of research and development per capita ought to be very much greater than other regions—if we are to offset our deficiencies in raw materials.

In balance New England seems as active in its industrial research as the nation as a whole. This is not good enough. There should be no room to doubt that the New England industries are leading the vanguard in technical progress. The region's manufacturers do not yet seem to be taking full advantage of the available research facilities outside their own companies, and they are still far short of the full potentialities of their own development. Realization of the importance of research and development work is a prerequisite to industrial vigor and growth.

Research and development expenditures in the United States are steadily rising. In 1928, American industry spent less than \$100 million on research and development. By 1954, over-all research spending had jumped to more than \$5 billion a year. In 1959, the total was \$12 billion, and in 1960 the figure was slightly more than \$13 billion. It is estimated that the amount being spent in these fields by 1969 will have reached \$22 billion. Arthur D. Little, Inc. forecasts an increase to approximately \$35 billion by 1970, based upon research expenditures rising in the 1960's at about the same rate as they did in the 1950's. At some point, research and development spending must taper off, although clearly the





Peacetime industry can benefit from work on technological frontiers. This is the Lincoln Laboratory "Haystack" radome.

limit of the rise in this curve is a long way off. Can New England increase its research and development at a more rapid rate than this national growth?

From the early days to the present time, New England has been in the vanguard of American industrial innovation. Today one only has to take a short drive or scan a newspaper to get an idea of the rich diversity and color and liveliness of the region's economic life. The electronics industry last year reportedly did \$1 billion worth of business in the Greater Boston area alone. In 1959 sales in this field amounted to \$749 million, while conservative estimates place sales at \$2 billion by 1970. Employment is expected to increase from 97,500 to 157,700 in the same period.

*Fourth*, as a result of the kinds of brains we have in our community, as a result of a vigorous educational system driving for excellence, as a result of a large volume of high-level research and growing numbers of "innovating" scientists, and of the general interaction of all of these and other factors, we should be developing in New England a future-oriented economic community, or to use Sir Charles Snow's phrase, "a future-directed community." There should be in our region—and, in fact, there already is a large amount of it—an outlook that fixes on goals ahead and not on accomplishments and failures behind, a readiness to accept innovation and to adapt to change, a preoccupation with a better future, a foresight with respect to what this future might be, and a sense of exuberance in bringing about this future. New England needs more of this future-direction, and its leaders, political, business, professional, and educational have a great opportunity to turn our eyes to these future goals and trends. This is a subtle aspect of our condition but I am convinced that a sense of the future is a part of a benign climate for growth.

*Fifth*, we need entrepreneurial, organizational, and community planning if we are to obtain for New England its proper share of the great technological enterprises of our time.

Recently there took place in Washington a meeting of representatives of various parts of the Federal Government to discuss the factors involved in selecting a community for a major responsibility in a research and development program. Let me quote one paragraph (out of many) which recapitulated this discussion. It seems to me to make eminent good sense and aptly to illustrate the point I am making:

"An effort must be made to achieve an effective marriage between the most able scholars working in an interdisciplinary atmosphere in universities and pursuing both graduate education and graduate research and with leaders in business and other areas in the community. The idea would be to get the businessmen to support the addition to the university of outstanding scholars who would do both education and research and would work closely with the business leaders to enlarge the horizon and area of knowledge based on experiments and research, and through which all the leaders could tackle their problems and move forward together, achieving targets and steadily increasing the community or regional technological competence or base."

*Sixth*, we have an unmatched opportunity further to develop the common market of ideas. By better relating industry and education we can reduce the lag between discovery and application. We already have and we can reduce it more. By reducing tariff barriers between fields of learning, between institutions, and between thinking people, we can cultivate the free trade of brains and skills which is one of New England's more exciting opportunities and most impressive accomplishments.



# A Way to Stabilize An Antenna in Space

*One-gyro system suggested for  
use in communication satellite*

ONE single-degree-of-freedom integrating gyroscope could stabilize a communications satellite and keep its radio antenna always pointed down, studies at the M.I.T. Instrumentation Laboratory have shown. The one-gyro concept was worked out in studies sponsored by Bell Telephone Laboratories, Inc., in connection with plans to use satellites as relay stations in a world-wide communication network, and is described in a recent M.I.T. report.

A satellite with one surface continually pointing toward earth would itself have gyroscopic properties; it would rotate about an axis through its center of mass (an axis which is perpendicular to the orbital plane) once each time the vehicle orbited the earth. The M.I.T. one-gyro concept combines the gyroscopic reaction of such a satellite with that of a single gyro to achieve relative precession of the vehicle and the gyro's gimbal. The oscillatory energy of the vehicle is dissipated as heat in the viscous damper of the gyro.

A key to one-gyro stabilization is skew—or tilt—in the reference axes of the gyro and in the radiation axis of the antenna relative to the principal inertial axes of the satellite. The antenna could be mounted on the satellite with its radiation axis skewed away from the vehicle's axis of least inertia (the axis that ordinarily would align with the local vertical when the satellite was in orbit), around the satellite's axis of intermediate inertia

(the axis that would tend to align horizontally in the orbital plane). The gyro could be installed with a similar skew in the same direction, but with reference to the radiation axis of the antenna; i.e., the input reference axis of the gyro would be skewed (around the gyro output axis) away from the antenna radiation axis, but in the same direction as the antenna's original skew.

As orbiting began, the axis of least inertia of the satellite would seek to align along the local vertical. At the same time, the gyro element in the gyroscope would seek to align its spin axis with the axis perpendicular to the orbital plane. A torque generator or similar device in the gyro would exert a torque in one direction on the gyro gimbal and, hence, a torque in the opposite direction on the gyro case and the vehicle.

If the angular momentum of the gyroscope, the tilt of the gyro reference axis, the tilt of the antenna radiation axis, and the gyro's torque generator torque were correctly chosen, the resulting balance between oppositely directed torques would produce an equilibrium orientation of the satellite in which the antenna axis would be downward along the local vertical. Components of gyroscopic angular momentum from both the vehicle and the gyro would combine to produce pitch damping, while the remaining components of angular momentum of both would combine to produce simultaneous damping of both yaw and roll oscillations.

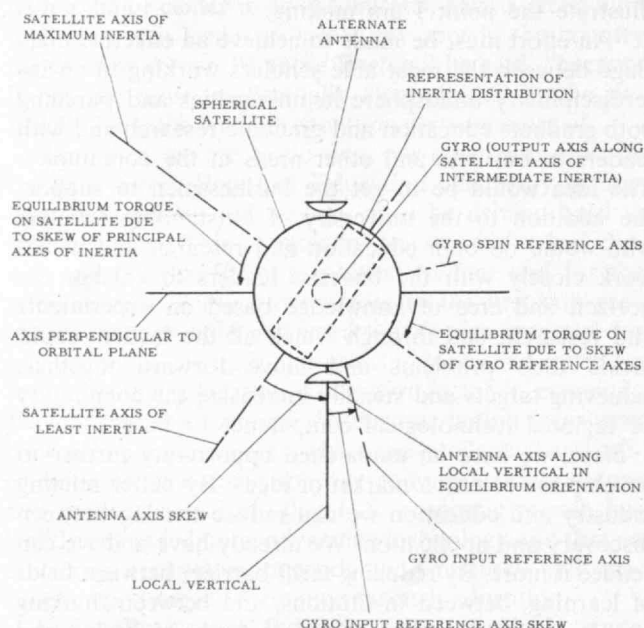
## The Need and the Alternatives

The single gyro-skewed axis concept is still in the theoretical stage but its eventual practicality is being studied. Computations show that a 200-pound satellite (having unequal principal moments of inertia because of unequal internal weight distribution), in a circular orbit at an altitude of 6,000 nautical miles could be stabilized with a gyro about the size of a water tumbler.

A vertically oriented satellite would be bistable, (i.e., upon settling down, the antenna could be pointing down or up). It could, however, have two antennae and a logic device to switch to whichever one was down at the time of use. Another solution would be a flipper device—a small flywheel that, by turning a predetermined number of times, would impart enough angular momentum to the vehicle to cause it to flip over.

The M.I.T. report said the need for a stabilizing system for a communications satellite is inescapable. The oblateness of the earth, the unlikelihood of injecting a vehicle into a perfectly circular orbit, solar radiation pressure, aerodynamic drag, bombardment by cosmic rays and micro meteorites, and variations in magnetic and electric field forces, all would contribute to perturbations in satellite attitude. Some early systems have used gas reaction jets linked to attitude sensing devices; others have relied on variable speed flywheels; and still others have been designed to use the earth's magnetic field. In communications satellites, where space, weight, and power will be at a premium, and the satellite stabilizing system must have an unusually long life expectancy, stabilizing systems that use only gyroscopes may be particularly attractive.

Joseph E. DeLisle headed the engineering group which executed the study. The single gyro-skewed vehicle axis concept was conceived by Benjamin M. Hildebrandt, '59, and developed by E. Glenn Ogletree, '61, Sidney J. Sklar, '60, and John G. Mangan.



**Schematic of a spherical satellite as viewed by an observer looking back along the path of its orbital motion.**

# Engineering to Help the Blind

*An M.I.T. education may include studying a cane and Braille to aid handicapped folk in new ways*

**T**HE CANE and Braille are still the most successful and widely used aids for the blind, even though scores of more complex instruments have been produced for them. Nothing comparable to radar, sonar, or inertial guidance has proven so useful to a blind man as a stick for mobility and embossed paper for communication.

In the Engineering Projects Laboratory at M.I.T., both the blind man's cane and his Braille book are being studied now as part of a dual effort: 1) to devise better ways of helping the handicapped; and 2) to help students acquire the skills and understanding needed to solve engineering problems.

By placing strain gauges on a cane, the lateral, transverse, and longitudinal stresses in it that occur when it is tapped or swept over various surfaces have been detected. Thus new information has been acquired about the signals which many blind men have learned to interpret. Other new techniques are being used to re-examine the arrays of dots in Braille, their spacing, shape, and background, as part of efforts to learn more about the resources and requirements of the sightless.

## A Variety of Senses

When a blind man finds his way with a cane, he relies mainly on his kinesthetic sense; he uses spatial information about the motion and position of his limbs that comes to him from stimuli originating in his muscles, tendons, and joints. But when he reads Braille, he depends on his tactile sense. His information then has to do with spatial-pressure distributions and comes from his finger tips. Both the stimuli and the feedback differ.

Specific, detailed knowledge of each process is needed to design superior instruments. Special equipment is being built now to study and compare kinesthetic and tactile sensory systems. Questions of scale have arisen and have led to the

study of devices used by people with good vision to handle remote objects.

The sensory aids now available to the blind include optical probes, which produce sounds corresponding to the brightness of light. To see whether their usefulness can be increased, workers in the Engineering Projects Laboratory are attempting to produce an optical probe which will transmit information through the user's tactile sensors. This might make the reading of a pattern possible with the help of kinesthetic stimuli.

Thus both research and development are involved in this as in other engineering work. The sensory aids project is roughly divisible, nevertheless, into three categories: 1) sensory measurement research such as has been mentioned; 2) sensory aids development; and 3) prosthetics research and development. These categories reflect the experience brought to bear on the handicapped man's needs by the members of the Faculty who are supervising the work: Assistant Professor Thomas B. Sheridan, '59, has been concerned in other work with engineering questions that have important psychological aspects; Assistant Professor Dwight M. B. Baumann, '57, has dealt with data-processing problems; and Associate Professor Robert W. Mann, '50, with energy-conversion systems.

## A Variety of Opportunities

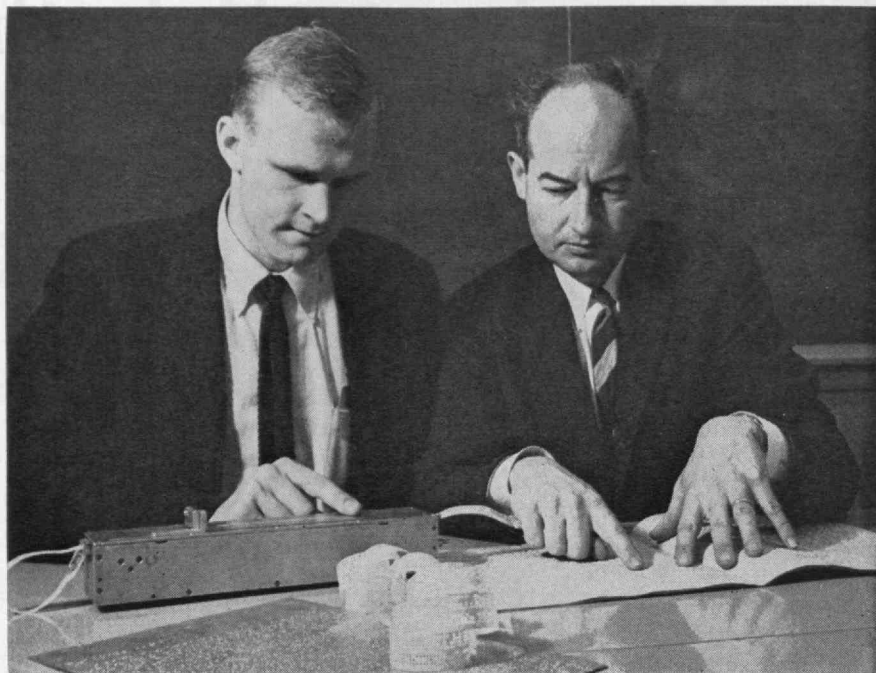
Unprecedented opportunities for engineers to help the handicapped have been created by such devices as the high-speed electronic com-

**Howard E. Fineman, '62, wields an instrumented cane as part of the sensory aids engineering project.**





**Assistant Professor E. E. Blanco lets the Braille rather than finger move.**



**Kai F. Johansen, '61, moves finger along Braille divided into lines from tape, under the supervision of Associate Professor Robert W. Mann, '50.**

puters that are capable of translating information from one code into another code. Can coding techniques being employed in computation laboratories, and the "reading" devices being developed for computers, be used also to help the blind?

Much of the type such as you are reading is set nowadays by a machine run by a punched tape. These tapes contain all of the information needed to present the same messages in Braille. Can the cost of producing Braille pages now be reduced? Simpler, more reliable, and less costly ways of giving the blind access to books than the method employed heretofore possibly could be devised.

Could Braille or some other code be read as well from a moving tape as by moving one's fingers along a static line? Is the three-by-two array of dots used in Braille the best possible form? Would some other code or form be easier for a blind person to learn? Would a different code permit him to read faster? One question leads to another, and a variety of machines have been built to study such data-handling problems.

#### **Experimental Machines**

In the most promising transducer configuration developed to date, the information storage medium is perforated paper tape similar to that

used in teletypewriters and flexowriters. The tape is perforated with the negative of the Braille symbols. Pins in the transducer are forced above a reference surface where there is no hole and left below it where the tape is perforated. Braille symbols can be created directly and mechanically from this tape without expensive electrical circuits and complex operating components. One device of this type is being built to present one line of words at a time, the way they appear on a printed page, and another one is being built to give the person using it a continuous moving flow of information the way the electric sign circling The New York Times building does.

Another device that will be completed soon is a high-speed electric Braille, which will be operated from an accessory to the keyboard of a standard typewriter. Shutters in an optical system below the keyboard will be activated by the keys and used to generate electrical signals for each letter, numeral, and symbol. These signals from the typewriter accessory will be used in the Braille to record the message on punched tape. The typist will be able to operate at the same speed as if using an ordinary machine, and the output will include both an ordinary manuscript for persons able to see and one in Braille for a blind

reader. If the typist is blind, she can use the latter to check the accuracy of her work.

Braille books are bulky and this makes storing them especially troublesome. Techniques have been developed, however, for storing vast amounts of information in very little space, and these too may be applied to the problems of the blind.

Even missile work may prove helpful to the sensory aids engineer. Components developed to store power and convert it as needed in missiles may also prove suitable for prosthetic devices, but much must be learned first about the energy and power demands that result from different degrees of human impairment.

The Office of Vocational Rehabilitation in the U.S. Department of Health, Education and Welfare is supporting much of this work, but support for some parts of it has come from other sources. Members of the Faculty responsible for teaching engineering design in the Department of Mechanical Engineering are directing it, and undergraduate as well as graduate students are engaged in it.

The direct results will include both research reports and hardware, and the indirect results may be seen years hence in the way M.I.T. Alumni will approach and solve other engineering problems.



# Institute Yesteryears

## 25 Years Ago . . .

AT ITS meeting of March 10, 1937, the Institute's Corporation voted to increase the tuition the following autumn from \$500 to \$600. "Coincidentally," as The Review reported, "substantial additions [would] be made to funds for scholarships and fellowships, thus removing any barriers to obtaining the advantages of a Technology education for students of high promise but limited means.

"The Corporation's decision was prompted by the uncertainties of future incomes from gifts and endowment, as well as the prospect of rising prices. Nor was this step taken without consideration of many other factors, including a study of tuition in American colleges. Although the Institute's expenses, particularly for extensive laboratory operation, are inherently higher per student than many other institutions, its present tuition, which includes all the charges usually considered as extra undergraduate fees and taxes, is still slightly lower than the combined tuition and extra fees of several institutions whose operating expenses are considerably lower. . . .

"The present average cost per student for a year's education at Technology is slightly more than \$1,000 . . . [and] of the total cost, approximately \$700 goes into direct academic expenses, such as teachers' salaries, library, and laboratory instruction. The remaining 30 per cent represents the cost of administration, maintenance of grounds and buildings, and special research of great value to teacher and student alike."

¶ On March 13, the Institute mourned the passing of *Elihu Thomson*, a Life Member of the Corporation since 1898, and its Acting President during the period March 1, 1920, to January 1, 1923.

¶ On March 17, at the 89th annual meeting of the Boston Society of Civil Engineers, the oldest engineering society in the United States, Professor *Harold K. Barrows*, '95, as retiring President, presented the Society's Desmond Fitzgerald Medal to *Albert Haertlein*, '18.

## 50 Years Ago . . .

ON MARCH 5, 1912, at the Hotel Belmont in New York City there took place the historic first meeting of President Richard C. Maclaurin and George Eastman—and the beginning of a confidential relationship which persisted until January, 1920, when it was publicly revealed that Mr. Eastman was Maclaurin's "Mr. Smith."

At Mr. Eastman's request, President Maclaurin had come to dinner to tell him of the Institute's hopes with respect to the building of the "New Technology" in Cambridge. In the words of Professor Henry G. Pearson, President Maclaurin's biographer:

"As Maclaurin talked on, he was excited not only by the picture he was painting, always freshly convincing

in his eyes, but by the keenness and sympathy of understanding shown by the evidently remarkable man who listened and questioned; absorbed in this moving experience, he was not in the least prepared for the final question: 'What sum will be needed?' He drew his breath, answered, 'Two and a half millions,' and received instantly the amazing response, 'I shall send you a draft for that amount.'


"One condition Eastman made, and one only: his gift was to be anonymous. 'May I tell my wife?' Maclaurin asked. 'Well, yes, but no one else.'

"When after a night on the train to Boston devoted to anything but sleep, Maclaurin reached home and told the news to the one person on whom the interdict

## GEORGE EASTMAN

»»»» OF RARE MOULD  
FINE GRAINED ««««  
»»»» SENSITIVE TO  
BEAUTY RESPONSIVE  
TO TRUTH CONSERVER  
OF HUMAN VALUES  
»»»» PIONEER IN THE  
SUSTAINED APPLICATION  
OF SCIENTIFIC RESEARCH  
TO INDUSTRY ««««««««



»»»»»»»»»» FRIEND OF  
THE MASSACHUSETTS  
INSTITUTE OF TECHNOLOGY «««««««« 

had not been laid, he had a momentary difficulty in convincing her that he was not amusing himself with some sort of mystification. The Executive Committee [of the Corporation], requested to open its mouth and shut its eyes, obeyed with alacrity.

"For convenience, the unknown must have a name; 'anonymous giver' was too clumsy for everyday use. To call him 'Smith' was at first merely the inspiration of the moment for Maclaurin, but the use of this undistinguished surname caught on so well with the public, tickling its sense of humor and even heightening interest in the event, that it was continued.

"From time to time Maclaurin threw out hints to tease the guessers: 'Mr. Smith' was not a graduate of Technology; he did not live in Massachusetts; extracts from his letters were published, stating his purpose in making the gift, his ideas about the buildings, and so

on. As time went on—the secret was kept for eight years by the Maclaurins and his secretary [Miss M. R. Miller]—and Eastman gave and gave again to the Institute.”\*

¶ On March 13, President Maclaurin reported to the Corporation that he was “fortunately in a position to make an announcement that is unique in its character as far as the Institute is concerned, and one that must mark an epoch in our history.

“A donor, who wishes for the present to remain anonymous, has offered to subscribe, whenever it may be needed, the sum of \$2,500,000 toward our building fund. This should practically suffice to build the New Technology as far as strictly educational buildings are concerned. Provision has yet to be made for a centre of social activity among the students, for student houses or dormitories, for the equipment of the new buildings and for the laying out of the grounds, these being matters that the donor expects to be provided by other benefactors. To raise funds for these purposes, as well as an endowment that will enable the Institute to maintain its position of acknowledged leadership in its chosen field is the main financial problem with which our Corporation is now confronted.

“The gift that I have announced is one of the largest in this era of large things. It has been given in a spirit that shows a modern businessman at his very best and in a manner that cannot fail to command our admiration by the evidence that it displays of the desire to do a great thing quietly and without fuss.

¶ “It may interest you to be told some of the reasons for this gift indicated by the donor in the course of our conversations.

“First. His belief in the need of the highest technical education today and of its growing importance in the future.

“Second. His recognition of the great work that Technology has already done and his knowledge of the high esteem in which its Alumni are held by those they have served.

“Third. His association with men of prominence in England and Germany and their assurance to him that the Institute of Technology is one of the great educational forces of the world.

“Fourth. His appreciation of the fact that prestige is a great asset to any institution and his belief that it should enable the Institute to attract the best students and instructors and so continue to turn out the best product.

\* According to Carl W. Ackerman, Mr. Eastman’s biographer, writing in *The Review* for April, 1932, “he did not know how much money he had actually given to Technology. When a tabulation was finally obtained, indicating an amount of approximately \$20,000,000, he studied the figures for several minutes and then remarked: ‘In a few years that will not be very large, for Technology will grow.’”

## Business Search on Again

GRADUATE STUDENTS of Industrial Management at M.I.T. have formed a group known as “Business Search” again this year to seek summer or permanent positions for its members with small firms having close-

“Fifth. His agreement with our policy of expansion and with the general plan already announced as to the expansion and his very hearty approval of our choice of a site, in his judgment, ‘Surely one of the very best in the world for such an institution.’”

## 75 Years Ago . . .

WROTE THE ever-crusading editor of *The Tech*: “Small improvements become of more general convenience or even necessity than the most pretentious ones. We have songs—local and technical, class and social, without number, but no one seems to have had enterprise enough as yet to devise and introduce some short and useful combination of notes suitable for everyday communication and intercourse. What we now need is a college whistle.

“Something with which we can, although at a considerable distance, instantly arrest a classmate just about to enter the recitation room until we can come up and extract from him an explanation of that knotty point which our last night’s efforts failed to elucidate.

“Who of us has not, on his way to the Institute, espied three or four blocks ahead, and walking like an excited ostrich, some long-legged fellow-student who owes us a little something which would come in particularly handy just then; and whistled with such soulful yearningness as to draw the attention of every small boy, pretty girl, herdic-driver and horsecar conductor within a furlong, but without reaching the ear or understanding of our absorbed friend. . . .

“A freshman or sophomore may yell—the former out of his incurable freshness, the latter from his traditional recklessness of the proprieties; but the unfortunate senior or junior must grin, and internally curse; whereas one short, well-understood whistle might turn as one the heads of every ‘Tech’ on the street and a gesture hold the attention of the right man. Surely some sort of a Tech whistle is bound to come, and it only remains for some energetic man to call a mass-meeting to consider the matter.”

## 87 Years Ago . . .

ON MARCH 17, 1875, in the Institute building at 491 Boylston Street, Boston, there assembled 23 graduates at 7:00 P.M. for the express purpose of perfecting the organization of the Alumni Association of M.I.T. Officers *pro tem* to serve until the first “Annual Meeting” were elected as follows: *Robert H. Richards*, ’68, President; *Channing Whitaker*, ’69, Vice-president; and *Charles R. Cross*, ’70, Secretary. At the first “Annual Meeting,” which took place on the afternoon of January 27, 1876, the balloting confirmed Richards and Cross for two-year terms as President and Secretary, respectively; and *Isaiah S. P. Weeks*, ’71, was chosen to be Vice-president.

ly integrated management teams and growth potential. The “Business Search” men average 24 in age and have had technical and liberal arts work and industrial experience. “Business Search” will welcome inquiries in care of the School of Industrial Management, M.I.T., Cambridge 39, Mass.





## CURBSIDE BANKER

**LESLIE SUTHERLAND**, an Assistant Vice President of the New England Merchants Bank, is probably the only banker in these parts who operates an honest-to-goodness motor bank. As head of our new Brighton Suburban Motor Office at 30 Birmingham Parkway, he speeds upwards of 400 car-borne customers on their way in record time each day (current average: 48 seconds).

**BESIDES BOSSING** this new kind of curbside bank, whose three drive-in windows prompt many customers to ask "What's the toll?", Les Sutherland is a man on wheels himself. He spends many hours each week in calling on his commercial-banking customers. For Les is a "company banker", too — a man who brings financial aid and counsel to many firms all over Greater Boston.

**THIS DUAL ROLE** sits well on Leslie Sutherland, another of the active, progressive young men who keep the New England Merchants on the move. If you have an idea that your firm could use the services of a company banker like this . . . or if you just want to bank in a hurry any time from 8 a. m. to 6 p. m. . . . stop in soon and meet our "curbside banker" at the Brighton Suburban Motor Office of the New England Merchants National Bank.



# NEW ENGLAND MERCHANTS NATIONAL BANK

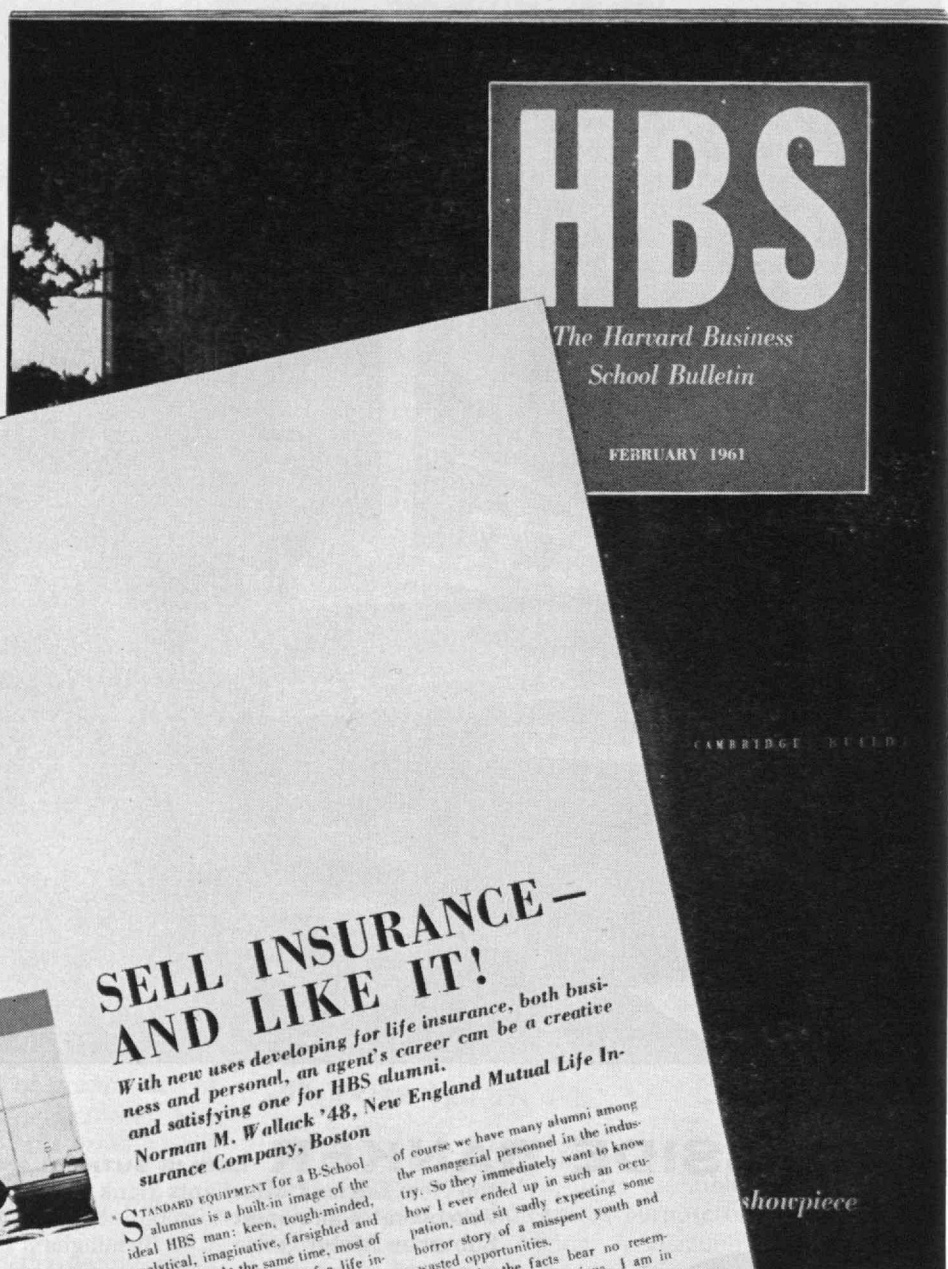
MEMBER F. D. I. C.

FOUNDED 1831

28 STATE STREET, BOSTON



# Why a successful man gave up a career



# L

## SELL INSURANCE— AND LIKE IT!

*With new uses developing for life insurance, both business and personal, an agent's career can be a creative and satisfying one for HBS alumni.*

**Norman M. Wallack '48, New England Mutual Life Insurance Company, Boston**



STANDARD EQUIPMENT for a B-School alumnus is a built-in image of the ideal HBS man: keen, tough-minded, analytical, imaginative, farsighted and resourceful. At the same time, most of us have a mental picture of a life insurance agent: unimaginative, plodding, high-pressure, ill-informed, persistent and annoying.

Given the clash between these two pictures, my Business School friends really raise an eyebrow when they find out that I am one of those "people with endurance—a man who sells insurance." There are very few graduate business school alumni in my end of the business, much less HBS types, though

of course we have many alumni among the managerial personnel in the industry. So they immediately want to know how I ever ended up in such an occupation, and sit sadly expecting some horror story of a misspent youth and wasted opportunities.

Actually, the facts bear no resemblance to their assumptions. I am in this business because I like it, because I chose it after trying several other types of work, because it offers all kinds of opportunities for ingenuity in developing special insurance programs for particular companies and individuals. In so doing, I have come to the conclusion that businessmen are so

# in industry to start one in life insurance

Norman Wallack had good reasons.  
Here's the first-hand account he gave us after his article  
had appeared in the Harvard Business School Bulletin —

"After graduation from Harvard Business School, I did well during the next nine years in two different areas of business. First, as merchandise manager for a large Midwest manufacturer. Next, as developer and owner of a camping-equipment company. But after five years of having my own company, I sold out at a substantial profit. Six months later I had decided to sell life insurance for New England Life.

"I had plenty of confidence by this time in my business ability. Now I wanted to find an area where it would pay off on its own and require little reliance on others. I wanted a field that offered increasing income as I grew older without suddenly dropping off when I reached 65 . . . that held fewer

of the frustrations encountered in industry . . . that could put to best use my training at the School, experience and capabilities.

*"Life insurance seemed to come closest to this ideal. So I picked out the company with one of the finest reputations and cost pictures in the industry and sought out one of the most outstanding training agencies in the business.*

"It adds up to this: I'm in this business because I like it. Because I chose it after trying other types of work. Because it offers all kinds of opportunities for developing special insurance programs for companies and individuals. It's the unusual combination of freedom and variety that appeals to me. Perhaps it will appeal to you."

If you'd like a reprint of the 5-page article by Norman Wallack, "I Sell Insurance — And Like It!" just send along the coupon. We'll also mail you our free booklet, "Are you cut out for a career in LIFE UNDERWRITING?" which describes the opportunities with New England Life for those men who meet our requirements.

## NEW ENGLAND LIFE

NEW ENGLAND MUTUAL LIFE INSURANCE COMPANY: FOUNDER OF MUTUAL LIFE INSURANCE IN AMERICA IN 1835. INDIVIDUAL AND GROUP LIFE INSURANCE, ANNUITIES AND PENSIONS, GROUP HEALTH COVERAGES.

### THESE M.I.T. MEN ARE NEW ENGLAND LIFE REPRESENTATIVES

Arthur C. Kenison, '19, Boston

Blaylock Atherton, '24, Nashua, N. H.

John H. Schaefer, '25, Newark

Herbert L. Neitlich, '49, Boston

Vice President John Barker, Jr.  
501 Boylston Street  
Boston 17, Mass.

Please send me a reprint of Norman Wallack's "I Sell Insurance — And Like It!" and your free booklet, "Are you cut out for a career in LIFE UNDERWRITING?"

Name.....

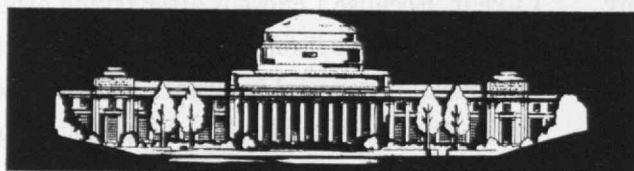
Street.....

City.....Zone.....State.....

## An Invitation to ...

PHYSICISTS  
MATHEMATICIANS  
AND ENGINEERS

from — M. I. T.



The Laboratory's staff of over 1000 under the direction of Dr. C. Stark Draper is engaged in the conception and perfection of completely automatic control systems for the flight and guidance of missiles and space vehicles. Its achievements include the Navy Mark 14 Gunsight, the Air Force A-1 Gunsight, Hermetic Integrating Gyros (HIG), and the Ship Inertial Navigation System (SINS). The Laboratory developed basic theory, components and systems for the Air Force THOR and, later, the TITAN missile. Other accomplishments include the Navy's POLARIS Guidance System.

Recently, the Instrumentation Laboratory was selected by NASA to develop the guidance navigation system for the moon space craft project, APOLLO.

Research and Development opportunities exist in:

- RESEARCH, DESIGN AND EVALUATION OF GYROSCOPE INSTRUMENTS
- ANALYSIS OF SYSTEMS AND COMPONENTS
- HIGH PERFORMANCE SERVOMECHANISMS
- POWER SUPPLIES AND MAGNETIC AMPLIFIERS
- DIGITAL AND ANALOG COMPUTERS
- ELECTRO-MECHANICAL COMPONENTS
- TRANSISTOR CIRCUITRY AND PULSE CIRCUITRY
- COMPUTER PROGRAMMING AND SIMULATOR STUDIES
- OPTICS, ASTRONAUTICS AND MANY OTHER AREAS

CALL OR WRITE HOWARD R. MILLER, PERSONNEL OFFICER

**INSTRUMENTATION LABORATORY**  
MASSACHUSETTS INSTITUTE OF TECHNOLOGY  
68 ALBANY STREET Bldg. 3R ● CAMBRIDGE 39, MASS.  
UNIVERSITY 4-6900, EXT. 3544

- Graduate courses may be taken while earning full pay.

"An equal opportunity employer"

## Feedback

(Continued from page 3)

see need for improvement. I'm trying to do what I can both personally and through my own professional societies, and hope others of you will see fit to do likewise.

68 Long Hill Drive  
Stamford, Conn.

### Who Will Speak for Industry?

FROM FRASER M. MOFFAT, '20:

My interest has been attracted by the letters appearing in Feedback regarding the "Most Wanted Class?"

You have now published two communications, one from a five-year graduate and one from an 11-year graduate. I would think that they both are subject to the comment of Licher, '50, where he says that "admittedly, recent graduates need some seasoning and experience before they can be given much responsibility, but not years of drudgery."

I repeatedly advised my own son (1951 at Williams) to use his first five years out to look around and decide what he really wanted to do. If, then, years of drudgery are encountered, make a change. Licher made such a change, and seems now to be happy.

There is, however, the industry side of the question. According to Licher, industry is paying too much for what it gets, or can use. But what does industry have to say about this? Have you or can you solicit comment on this question from among M.I.T. graduates on the *hiring* side? What do they think about the "most wanted"?

International Chemical Marketing  
New York 4, N.Y.

### More About Mancala

FROM C. SHEPARD LEE, '14:

Referring to your article "You, Too, Can Play Mancala" (January, 1962), the comments below may not be helpful to computer students and experts. They will, however, amend the article most helpfully.

1) The game described is not any version described in the usual bibliography, but is what the U.S. originator of Yo-yos described to me as (the Philippine) Sonkahan. (I made and sold him a board and witnessed his patent applications—for a Yo-yo. And I made the first 2,000,000 Yo-yo strings in the U.S.)

2) I have long played Kboo, a version from east of Liberia I think, and know it as comparable to checkers. It, indeed, may be considered one of the world's best games.

3) For the game you describe I, without benefit of electronics, worked

(Concluded on page 42)



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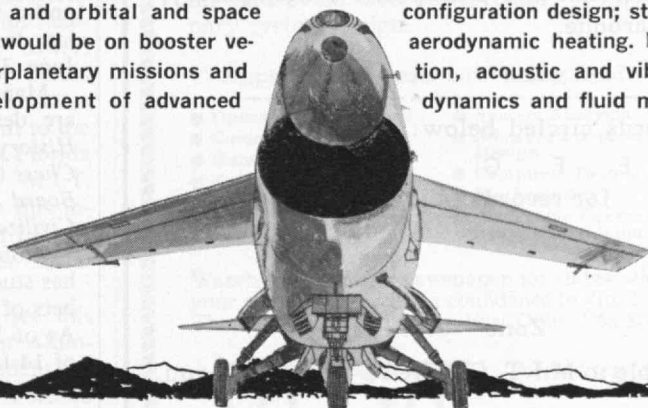


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## Feedback

(Concluded from page 40)

out the various possibilities and discovered how the first player can easily win, which explains why the two players must start simultaneously! It, and similar versions from Africa, are poor games. There are, of course, many different African, Holy Land, and South Coast of Asia variations.

4) The best reference I know is an article in the annual Reports of the Smithsonian Institution and National Museum for about 1895. It describes half a dozen games, and gives cuts of more gameboards. (On my travels I saw one board in the Zanzibar museum; a mother-of-pearl covered one in the Sultan's palace museum in Istanbul, and half a dozen in the Raffles Museum in Singapore.) The standard reference is Lane's *Manners and Customs of the Modern Egyptians*. For the good game, Kboo, see the June, 1910, issue of the *National Geographic Magazine*. About 1917 the *Youths' Companion* magazine digested the latter.

5) In addition to the two games mentioned, I have studied a game I got from an African delegate to some UN organization in New York City. (It came to my attention through the Sunday issue of a Worcester paper.) I did not care for the game so probably will not complete study of it.

In short: there are many versions of what is loosely called mancala; Kboo is indeed one of the world's best, but the game you describe is mediocre—because in the first part of the game chance rather than brains governs the play, and it is tedious at that time.

1616 Olive Street  
Santa Barbara, Calif.

Mr. Lee's reference (4) apparently is to "Mancala, the National Game of Africa," by Stewart Culin in the Report of the U.S. National Museum under the direction of the Smithsonian Institution for the year ending June 30, 1894.

Many different kinds of mancala are described in H. J. R. Murray's *History of Board Games Other Than Chess* (Oxford, 1952) and R. C. Bell's *Board and Table Games From Many Civilizations* (Oxford, 1960).

Professor McCarthy's M.I.T. group has studied "kalah" with various numbers of beans in the bins at the outset. As of January 1, a search to a depth of 14 from the initial position with 36 counters on the board indicated the game would be a draw if both players played correctly. The Review expects to have a further report on playing mancala with a computer next month.

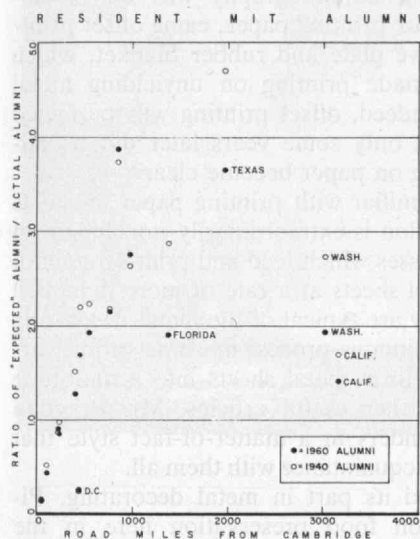
—Ed.

## Alumni Distribution Equation

FROM PHILIP B. HERR, '59:

Further analysis of the alumni location data presented in The Technology Review (H. E. Lobdell, "Westward Ho, and Farther South," December, 1961) reveals the role of distance from M.I.T. in affecting alumni location.

In general, Alumni could be expected to be located among the states in proportion to state populations. An "expected alumni" distribution for the 15 states listed in the article was computed on this basis, and then divided by the actual number of Alumni in each state. These ratios were then plotted against distance from M.I.T.,



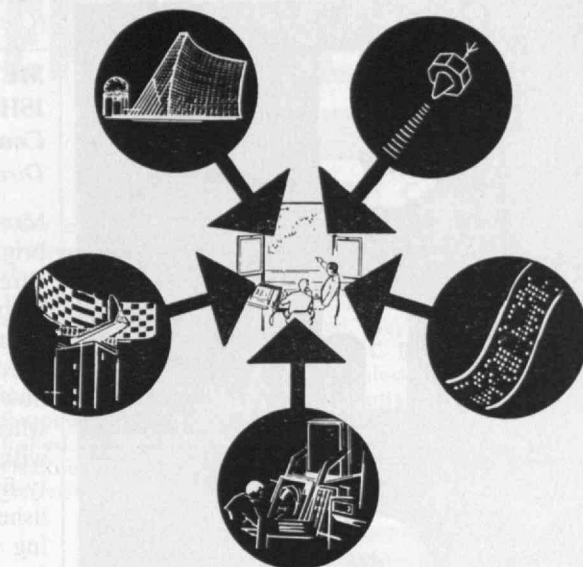
with the results shown on the enclosed diagram. The ratio clearly and regularly is related to distance, suggesting that alumni distribution follows the form

$$A_i = f \left( \frac{P_i}{d_i^x} \right)$$

where  $A_i$  is Alumni in state (1),  $P_i$  is the population of that state, and  $d_i$  is the distance from M.I.T. to the state. Similar analyses of airplane trips, telephone calls, and, I believe, M.I.T. freshmen have been made by others with similar results—West Coast states consistently refusing to conform to the usual pattern. The attraction of Florida and Washington, D.C., for M.I.T. Alumni which is suggested by this investigation has no parallel that I know of in similar studies of other social phenomena.

It would be interesting to see this type of analysis carried out for Alumni in all states and also for student admissions. I'm sure that all this would have some usefulness, though at the moment I can't imagine what it is.

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Cambridge, Mass.



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## Books

(Continued from page 28)

**METAL DECORATING FROM START TO FINISHES**, by Charles R. Bragdon, '07; Bond Wheelwright Company (\$4.95). Reviewed by John I. Mattill, M.I.T. Director of Publications.

MOST OF US take tin cans for granted, no matter how bright. Not so Charles R. Bragdon, '07, whose 55-year career in chemical engineering has made him a leading authority on varnishes, coatings, lacquers, enamels, paints, printing ink, and textile colors.

Mr. Bragdon's book begins with the unlikely story of how, in 1796, a young Bavarian discovered lithography when he managed to write his mother's laundry list with a greasy crayon on a piece of porous stone. Seventy-five years later, when lithography was well established as a process for printing paper, came offset printing with ink-receptive plate and rubber blanket, which for the first time made printing on unyielding metal surfaces possible. Indeed, offset printing was perfected for this application; only some years later did its advantages for printing on paper become clear.

To a publisher familiar with printing paper in sheets and rolls, Mr. Bragdon is extraordinarily nonchalant in describing offset presses which feed and print 40-pound, four-by-six foot steel sheets at a rate of more than 100 per minute. But they are typical of the metal-decorating industry today: continuous-process machines print, varnish, coat, cut, and form metal sheets into a multitude of containers and other useful articles. Mr. Bragdon chronicles these wonders in a matter-of-fact style that implies a long-time acquaintance with them all.

M.I.T. has played its part in metal decorating. Pioneering research on food preservation here in the years just before Mr. Bragdon was a student focused attention on the quality of tinplate and the importance of linings and coatings; today's canning industry relies for the success of its containers on the arts of metal finishing applied as much on the inside as on the outside.

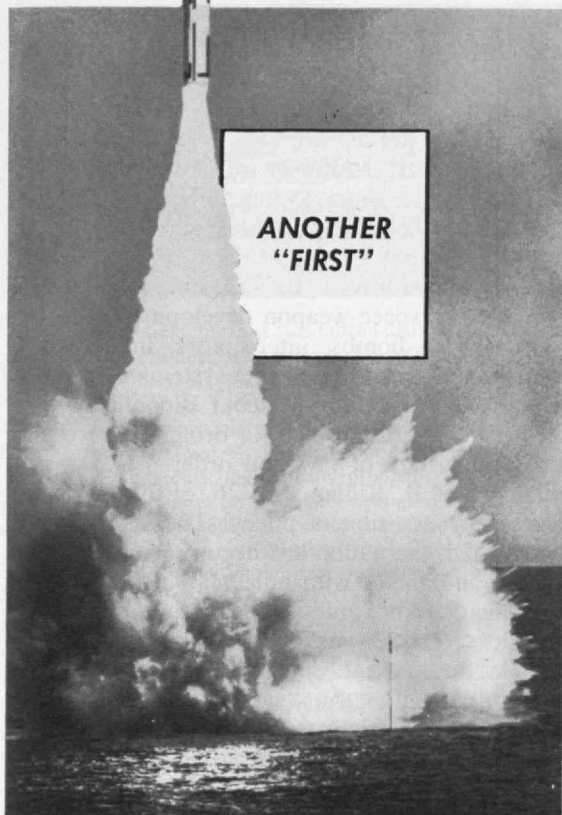
## From Professorial Pens

FRANCIS BITTER, Professor of Geophysics, contributed the first article in Volume 1, Number 1, of *Applied Optics*, a bimonthly launched in January, 1962, by the Optical Society of America. Its title: "Magnetic Resonance in Radiating or Absorbing Atoms." Professor Bitter also wrote on "The Magnetic Family for the Feb. 3, 1962, issue of *The Saturday Review*.

Ernest Rabinowicz, Associate Professor of Mechanical Engineering, reported on the formal study of "Wear" in the February, 1962, *Scientific American*. Although such study has not contributed much yet to the prolongation of life of mechanisms, he wrote, it will become increasingly important as new materials—plastics, ceramics, cermets, alloys, and intermetallic compounds—are applied in sliding systems that operate at great speed, in high vacuums, at extreme temperatures, with exotic lubricants. . . . W. Wesley Peterson, in the same issue of *Scientific American*, described "Error-correcting Codes," and explained some of the recent advances made by M.I.T. information theorists.

(Continued on page 46)

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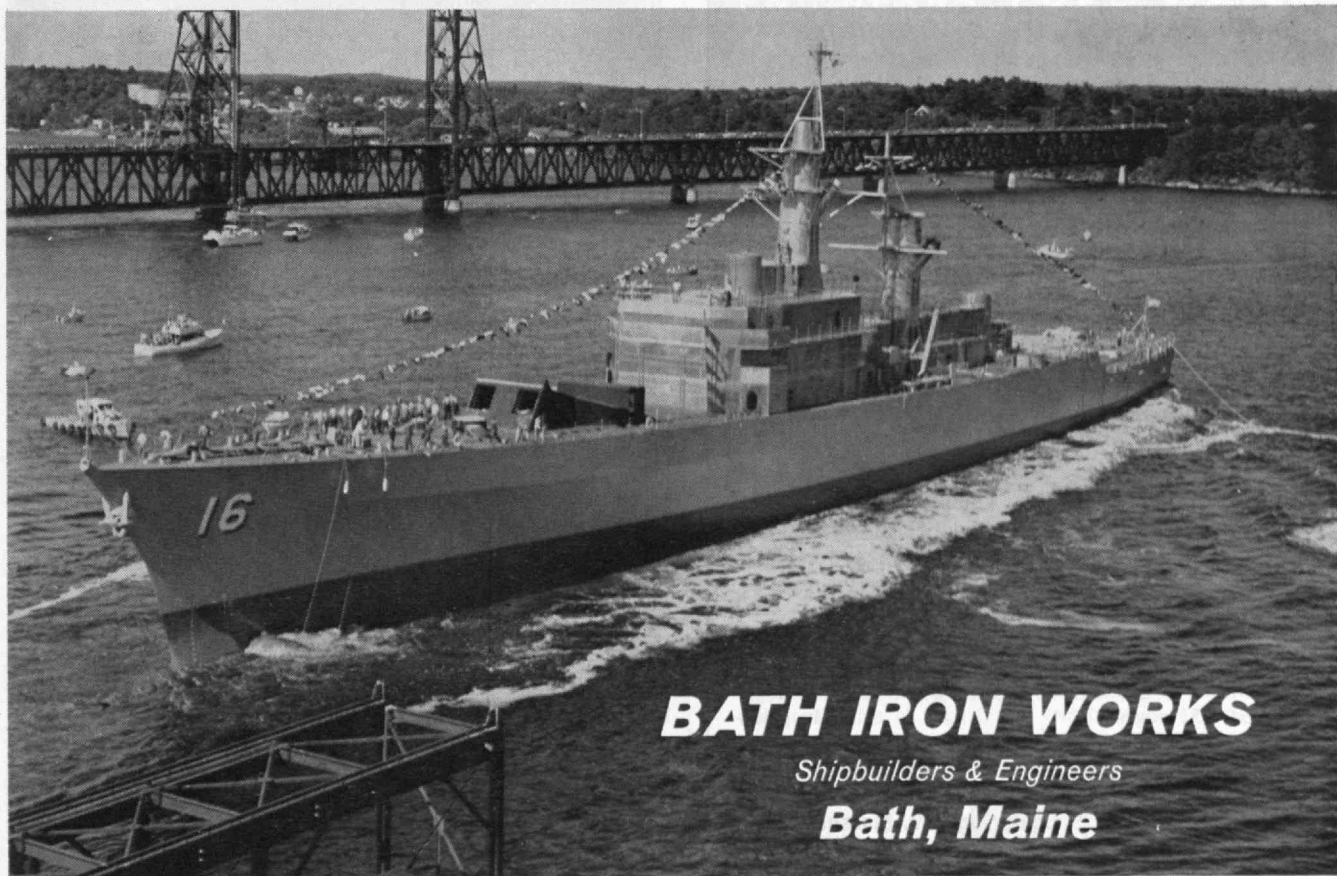


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## Books

(Continued from page 44)

**THE LORE OF LARGE NUMBERS**, by Philip J. Davis; Random House (\$1.95). Reviewed by Philip Franklin, Professor of Mathematics at M.I.T.

THIS is one of a series of expository monographs sponsored by the School Mathematics Study Group. The objective of the series is to make some important mathematical ideas interesting to and understandable by high school students and nontechnically trained adults.

Dr. Davis has used a broad interpretation of his title to unify the treatment of many topics. Thus small numbers enter as the reciprocals of large numbers, and lead to a discussion of infinite decimals, errors, and approximation. And various infinite sets and infinite sequences are described.

There are a number of stimulating problems, with answers to many of them. Numerous tables are well designed to illustrate the argument without being unduly elaborate. There are many historical references, including a number of relatively recent results made possible by modern digital computation facilities.

The author uses a clear, straightforward style and a point of view likely to interest the reader even when the material is not entirely new to him. The selection of material and treatment of it are admirably suited to the purpose of the book.

The book is almost free of misprints. However, on page 124, the approximate value of the  $10^{10}$  prime,  $2.3 \times 10^{10}$ , should be  $2.5 \times 10^{11}$ .

**OUTER SPACE: Prospects for Man and Society**, edited by Lincoln P. Bloomfield; Prentice-Hall Spectrum Series (\$1.95). Reviewed by Nelson C. Lees, '53, Assistant to the Director of Public Relations at M.I.T.

THE PRIMARY PURPOSE of this book edited by an Associate Professor of Political Science at M.I.T. is to make the basic political, economic, and social issues of space programs more accessible to the layman. Four of the eight authors are at M.I.T.

H. Guyford Stever, Professor of Aeronautics and Astronautics, gives a short technical briefing on the mechanics of putting vehicles into space. Donald G. Brennan, '55, Assistant Leader of the Communications Systems Group at Lincoln Laboratory, describes a number of possible space-weapon developments—orbital and lunar-based bombs, interceptors, manned vehicles—and relates them to possible systems of inspection and control. The editor, Lincoln Bloomfield, discusses the very complex problem of bringing space under a workable system of law and order.

Chairman James R. Killian, Jr., '26, of the Corporation, raises a key question of policy: Is the allocation of resources which the nation has begun to set for itself a rational one, in balance with other national goals and objectives? He does not question our commitment to space, but does question its degree and direction. "I am nevertheless convinced," he concludes, "that space exploration is one of man's great adventures and the United States must participate in this adventure with brilliance and boldness."

(Continued on page 48)

### out this month...

**MANAGEMENT AND THE COMPUTER OF THE FUTURE**, edited by Martin Greenberger, M.I.T. Eight lectures and extended discussions by leading figures in the communication sciences on the future uses of computers in activities related to management: their application to decision-making, to educational processes, to libraries of the future, to the simulation of human thought, and other areas. 368 pages. \$6.00

**THE UNIVERSE**, by Otto Struve, Director of the National Radio Astronomy Observatory, Green Bank, W. Va. The cosmos as it appears to contemporary astronomers: the authenticated features, the reasonable surmises, and the far-out hypotheses—accompanied by the logic of discovery, the unfolding of the evidences, and the present status of rival theories. Also, a historical summary of radio astronomy, and many recent photographs. 176 pages. **In press**

**HIGH MAGNETIC FIELDS**, edited by Henry Kolm, B. Lax, F. Bitter, and R. Mills. Eighty-eight selected papers presented at the International Conference on HMF at M.I.T. reporting on many phases of recent research such as new solenoid designs, cryogenic techniques, new power generators, coil-cooling systems, superconductive compounds and rare-earth alloys, plasma containment, and magnetic shielding of space travelers. Illustrated. 752 pages. **In press**

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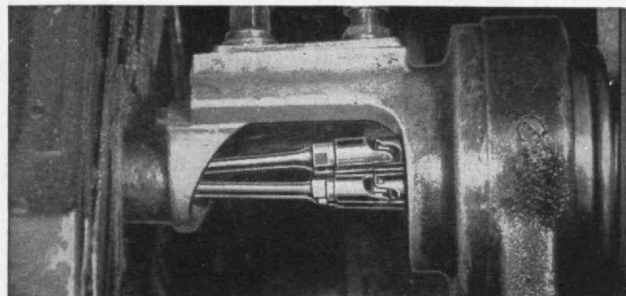
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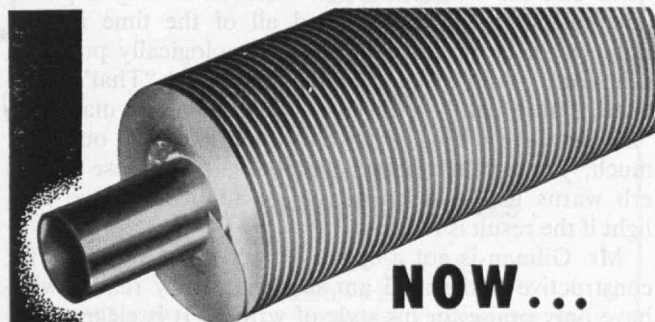
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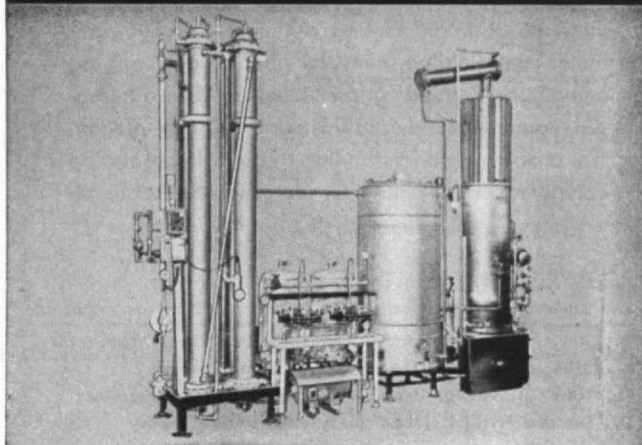
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## Books

(Continued from page 46)

**THE LANGUAGE OF SCIENCE, A Guide to Effective Writing**, by William Gilman; Harcourt, Brace & World, Inc. (\$4.95). Reviewed by Robert R. Rathbone, Associate Professor of English.

THIS BOOK on technical writing is neither a textbook nor a handbook but a series of highly readable essays on the basics of expressing technical information clearly and effectively. It is addressed to everyone who deals with scientific and technical subjects.

The emphasis throughout is on language. The title, *The Language of Science*, is misleading, but Mr. Gilman immediately restates it in his first chapter as "the language of the technical man." This language, he continues, is bad language: "It is responsible for an intolerable amount of time lost with needless riddles and it paralyzes the flow of information." A strong condemnation, but true, nevertheless, for much of the technical prose that I have read.

In the next 14 chapters Mr. Gilman presents what he believes to be the major causes of poor writing and suggests how they can be remedied. He quickly uncovers the usual pitfalls: coinages, jargon, overlong words, inadequate transitions, and overcrowded sentences, to name a few. But he counters these with some unusual rules of thumb that stick with the reader through the numerous "before and after" examples that follow. For instance, he opens his chapter, "Words That Say It Best," with this advice: "With all respect to the simple word and the wonders it can work, it is only a part-time magician. What we need all of the time is the right word, be it short or long, etymologically pure or a bastard." And in another chapter called "That's Not What You Meant" he discusses brevity in this manner: "Brevity is a virtue . . . but when you cut out too much, you end up being ambiguous. A Chinese proverb warns us, 'It is useless to go to bed to save the light if the result is twins.'"

Mr. Gilman is not a cynic. The criticism he offers is constructive criticism. I am sure that every reader will have only praise for his style of writing. It is clear, concise, and straightforward; lively, humorous, and challenging. It serves as an excellent model of the principles he advocates. Furthermore, the passages he cites as examples of poor and good writing fit the mood and context of technical communication.

I cannot say that the format of the book does justice to the writing. For one thing, the type face of the headings frequently is ineffective; for another, page layout lacks variety and appeal. I also prefer a larger page (his is 5 x 8 inches) so that white space can be used extensively and the lines of text spaced farther apart. These mechanical flaws would be unimportant were the book not intended as a guide; however they are not so serious as to lessen greatly the book's over-all worth.

In conclusion, I want to heartily endorse *The Language of Science*. It proves that a writer with talent and imagination can produce an effective piece on a worn subject. Only a few of the hundreds of articles and books on technical writing that have flooded the market during the past decade have been worth raves.

(Concluded on page 50)

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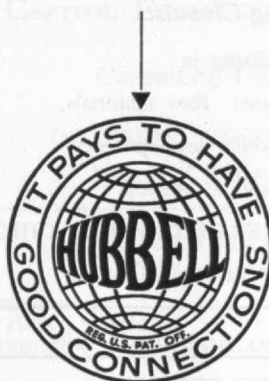
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## Books

(Concluded from page 48)

**SHAPE AND FLOW. The Fluid Dynamics of Drag**, by Ascher H. Shapiro, '38; Doubleday Anchor (95 Cents). Reviewed by Shatswell Ober, '16, Professor of Aeronautical Engineering, Emeritus.

THIS little book, in which an expert presents skillfully the rudiments of the fluid dynamics of drag, is one of the "Science Study Series" published for secondary school students. As such it is not for your favorite nephew without knowledge of mass, momentum, acceleration, etc., but for the bright science pupil.

Only drags resulting from the viscosity of the fluid are considered. Fluids are taken to include both gases and liquids, though a curious reader might wonder how the author "limits us to dealing with fluids of constant density" when air at various densities is used and the variation of gas density with pressure is well understood by school boys. (In the experiments in the wind tunnel jet at 230 miles per hour, the pressure change from front to side of the sphere is about two pounds per square inch, a substantial part of the atmospheric pressure of 15 pounds per square inch. How to answer a bright boy's question about constant density here?)

After showing results of some experiments illustrating the confusing paradoxes of sphere drag changes with speed, and the contrary results from streamlining in fluids with low and high viscosity, the author proceeds to the heart of the matter: a discussion of the "Fundamental Concepts and Principles of Fluid Dynamics." Here are introduced pressure and viscous (shear) forces, resulting motions, the idea of no slip at the wall, the variation of inertial and viscous forces with speed, size, density, and viscosity, and the Reynolds number. An Sc.D. candidate might profit from this discussion, and a bright science pupil understand it.

There follows discussion with illustrations of flows at low Reynolds numbers, including Stokes's law, and of drag at high Reynolds numbers. For the latter the ideas of "boundary layer" and separation are introduced and also laminar and turbulent layers—although here the difficulty of the subject prevents other than a few statements and routine illustrations. Finally, the reduction of drag by streamlining is illustrated and discussed (the choice of an ancient though very honorable dive bomber SBD for an example of a high-speed fighter of today is unfortunate), and the paradoxes shown in earlier experiments are explained. Altogether, a book to be read with much profit.

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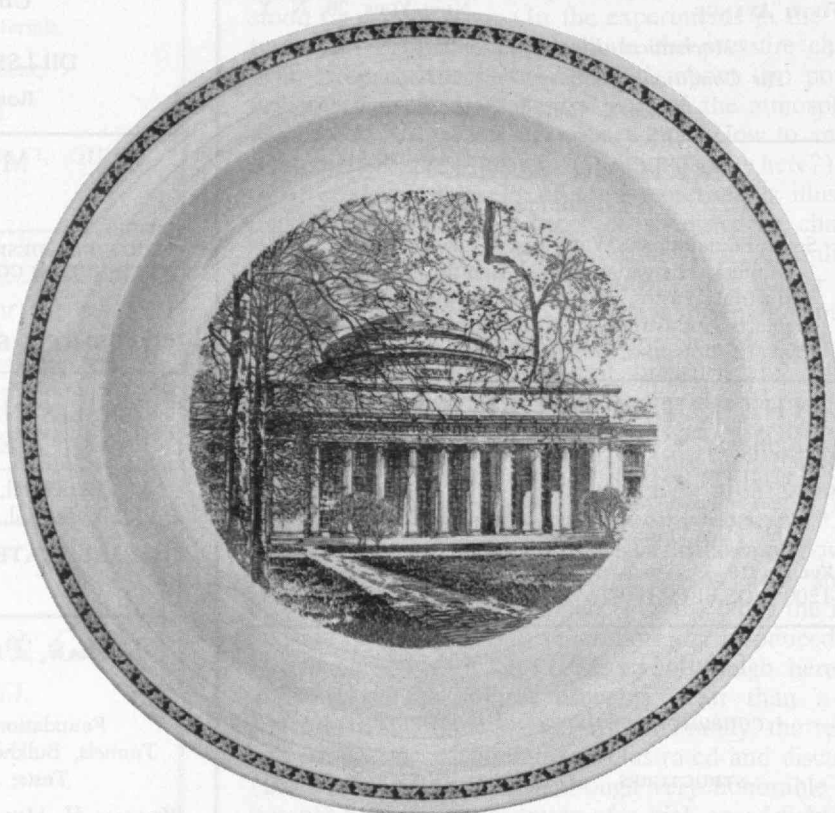
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# Club News

## Elliott Richardson Talks To Boston M.I.T. Club

The M.I.T. Club of Boston has resumed its series of discussions on the general theme "Technological Based Industry in Boston," and again this year speakers have been invited from the industrial, banking, political and academic scenes.

On November 16, former United States Attorney Elliott L. Richardson, spoke on corruption in Massachusetts and his investigation of an engineering firm that participated in "kick backs" to obtain public works contracts. He challenged the members not only to refuse to participate in such pay-offs, but to report to law enforcement agents any such attempts at bribery. During the lively question period that followed, Mr. Richardson offered several specific suggestions as to what his audience might do as individuals to correct the abuses.

On December 14, David G. Hoag, '46, assistant to Charles S. Draper, '26, Professor of Aeronautics, drew a capacity audience for his report on the progress of inertial navigation. A film declassified the prior day showed the Polaris submarine and missile launching system. As a result of recent awards given by the Apollo guidance system to the M.I.T. Instrumentation Laboratory and to Raytheon, a large delegation from the latter company was in attendance.

This year marks the first in which three M.I.T. groups are active in the Greater Boston area. Under the able leadership of "Chuck" Hieken, '51, we have maintained a membership of 260, and look forward to an excellent program for the rest of the year. This club meets the third Thursday of each month at 12:15 at the Union Oyster House located at 41 Union Street, Boston.—Robert H. Bliss, '48, Secretary-Treasurer, United Shoe Machinery Corporation, 140 Federal Street, Boston 7.

## Boston Stein Club Hears Feld on Disarmament

On January 16, Professor Bernard T. Feld of the M.I.T. Laboratory for Nuclear Science addressed the Boston Stein Club at the M.I.T. Faculty Club.

For several years now, the problems of disarmament have been examined at "Conferences of Scientists on World Affairs" held in Austria, Russia, and several months ago, in Stowe, Vermont. Professor Feld has attended all these conferences, and brought to the club his impressions of the most recent, and previous meetings with Soviet scientists.

Due to non-cancelled dinner reservations, the "profits" of our non-profit organization suffer. Members are asked, therefore, to give at least 48 hours notice of cancellation.—Harold D. Fine, '30, President, 2088 Washington Street, Newton Lower Falls, Mass.

## North Texans Hear About High Altitudes

Dr. Charles F. Gell, Manager of Life Sciences, Vought-Astronautics, and Professor of Physiology at the Southwest Medical School, provided the highlight of the annual holiday party held jointly by the M.I.T. Clubs of Northern Texas and Fort Worth. The party took place at the Howard Johnson Turnpike Restaurant on December 28. Forty-six members and guests from the Dallas-Fort Worth area heard Dr. Gell's timely description of man's efforts to survive in high altitude and space environments. He spoke of early attempts at high altitude flight which frequently led to disaster. Typical was the experience of three early French balloonists; they managed to reach 30,000 feet, but landed with two of the three men on board dead due to lack of oxygen. Many problems have been encountered and successfully solved since their time. Such relatively modern advances as pressure suits and the use of centrifuge testing were discussed and the dangers of explosive decompression were strikingly presented, based on the results of animal experiments. Dr. Gell concluded his talk with a movie illustrating the difficulties encountered when attempting tasks under conditions of weightlessness. Also shown was a special film which gave members an intimate look at a day in the life of the contemporary M.I.T. student.

We were very pleased to have as our special guests at this meeting, M.I.T. Second Century Fund Staff Representative Pete Cavanaugh and his charming wife, Margaret.

The M.I.T. Club of Northern Texas held a special election to find a replacement for Secretary-Treasurer Bob Lichten, '43. Bob was forced by pressing business commitments to resign prior to the expiration of his term in office. (He has served more than six years as secretary-treasurer.) The writer was unable to attend the meeting and consequently found himself unanimously elected to the post. Many thanks are extended to Bob by all members of the club for his many years of dedicated service.—Stan Martin, '50, Secretary-Treasurer, M.I.T. Club of Northern Texas, 3522 Townsend Drive, Dallas 29, Texas; Bob Foster, '50, Secretary-Treasurer, Fort Worth M.I.T. Club, 1100 Mason Drive, Hurst, Texas.

## Sussman Speaks at Miami On Iron Curtain Trip

The M.I.T. Club of South Florida held a dinner meeting on December 7, 1961 at the Old Scandia Restaurant in Miami. The guest was William Sussman, '40, who spoke about his trip behind the Iron Curtain last summer. His talk was highlighted by magnificent color slides of Budapest, Prague, the Ukraine and Moscow. Those enjoying the evening, along with their guests were, Kenneth P. Armstrong, '10, Frederick D. Rich, '13, Estus Magoon, '14, Richard L. O'Donovan, '27, Jack Platt, '34, Sidney Mank, '37, Scott J. Hoehn, '47, Irving Steinhart, '48, and Robert West, '57.—Irving Steinhart, '48, Secretary, 7630 Biscayne Boulevard, Miami 38, Fla.

## Gale Tells Japanese About M.I.T. Programs

Thirty members of the M.I.T. Club of Japan were present to hear Walter H. Gale, '29, Associate Professor of Aeronautics at the Institute, discuss current activities, and future programs planned by M.I.T. Dr. Melvin C. Molstad, '23, Fulbright Exchange Professor at Tokyo University, and Mrs. Molstad, also joined us to enliven the evening.

The M.I.T. Association of Japan wishes to extend to you all our best wishes for a very happy New Year, 1962.—Shikao Ikehara, President, Tokyo Institute of Technology, Department of Mathematics, Oh-Okayama, Meguro-Ku, Tokyo, Japan.

## Evans to Head Kansas City Club

With a great deal of satisfaction, the M.I.T. Club of Kansas City again gave its annual party for students of the Kansas City area. Each year the students from this area, along with their fathers, are treated to a Christmas luncheon.

Forty-three Alumni, students and parents attended this year's affair, held at the Red Carpet Room of the Fred Harvey House in Kansas City. An excellent representation of classes provided the Alumni portion of this gathering, and gave a good opportunity for discussion of current activities and conditions at Tech, as well as affording the students and their fathers a chance to become better acquainted with the Alumni in this area. Henry Young, Head of Chemistry and Chemical Engineering at Mid-West Research Institute, was our guest speaker. He spoke on how developments in technology in recent years are related to opportunities for technical employment in the Kansas City area. He brought to light the great potential in this area of technologically oriented business, research and educational activities.

J. Warren Evans, '39, was elected President, and Bernard J. Duffy, Jr., '44, Vice-president. B. J. Kirkwood, '49, will continue as secretary, and Philip Gruber, '25 will again act as treasurer.—B. J. Kirkwood, '49, Secretary, 7800 The Paseo, Kansas City 31, Mo.

## Central Ohio Host To Vacationing Students

For the past few years the M.I.T. Club of Central Ohio has invited M.I.T. students in the vicinity of Columbus to a luncheon during Christmas vacation, and response to the invitation was good again this year. On December 27, at the University Club in Columbus, eleven Alumni were hosts to the following students: Oscar Fleckner, '62, David Hosterman, '63, Douglas Fleckner, '64, Bert Japiske, '64, William Rogers, '64, James Elliott, '65, Wayne Gilford, '65 and Terry Welch, G.

We look forward to seeing any of our student guests again at our regular meetings held at 12:00 noon on the first Wednesday of every month at the University Club.—William A. Horton, '42, Secretary, 215 Front Street, Columbus 15, Ohio.

# Sloan Fellows

The School of Industrial Management continues to look forward to its Executive Development Convocation on May 3, 4, and 5 for the Alumni of the Sloan Fellowship Program and the Program for Senior Executives. It is expected that at least half of the Alumni of both programs will be present for this three-day convocation built around the theme "Management Decisions in a Changing World." The convocation director is **Peter P. Gil**, newly appointed director of Executive Development Programs at M.I.T. Mr. Gil has come to M.I.T. from a position as assistant director of the Centre d'Etudes Industrielles at Geneva, Switzerland. As director of Executive Development, he succeeded **John M. Wynne**, '56, who was appointed associate dean of the School of Industrial Management.

A number of changes of assignment have been reported for Sloan Fellows. **Richard R. Hydeman**, '47 (Sloan '56), Vice-President, Marketing and Engineering, Taylor Fibre Company, was elected a director of his company. . . . **Carl R.**

**Gloskey**, '59, was appointed general manager of the Chemicals Division of Metal and Thermit Corporation. . . . **James R. Connell**, '57, is the new systems management director of IBM's ASD Division. . . . **Randall W. Kirk**, '52, has been reassigned by Pan American Airways as project director in Vienna, Austria. . . . **Eugene A. Cafiero**, '60, is now plant manager of Chrysler's New Castle, Ind., Machining Plant. . . . **Eugene J. Hynes, Jr.**, '58, has been made special sales marketing representative, Electronic Data Processing Division, Minneapolis-Honeywell. . . . Campbell Soup has shifted two former Sloan Fellows: **A. B. Winters**, '57, is plant manager of the Campbell plant in Camden, N. J., and **Milton A. Zimmerman**, '60, has a new assignment as assistant plant manager in Napoleon, Ohio. . . . **Daniel K. Chinlund**, '50, has been made assistant works manager of the Allentown plant of Western Electric. . . . **Stanley Demain**, '60, is manager of the new Electronics and Instruments Division of Avien, Inc. . . . **H. Gordon Fromm**, '50, has been appointed vice-president of Sun Chemical Corporation and general manager of Sun Chemical's Graphic Arts group. . . . Of special interest is the fact that **James C. Farley**, '50, was one of 25 men named to SPORTS ILLUSTRATED's Silver Anniversary All-America for 1961.—**John M. Wynne**, Room 52-455, M.I.T., Cambridge 39, Mass.

qualified applicant has appeared for scholarship; therefore no scholarship grants have been made from the Fund. On June 30, 1961, the total income added to the Technology Loan Fund was \$18,074, so our fund has been of some help to students in a general way. . . . This note has been printed here in the hope that we will hear from our class members, as well as from members of other classes, about their views of scholarship funds.—**Andrew D. Fuller**, Assistant Secretary, 120 Tremont Street, Boston, Mass.

## '96

**Joseph Clary** writes that he thinks all of us are sustaining a good average since we still have 45 to answer rollcall. This winter's extremely cold weather has probably caused a big rush to the warmth of southern Florida this year. **Myron E. Pierce** went early, before the cold spell, to the Hotel Flower in Miami. Let us hope that the last of the penicillin poisoning has left him. . . . Among the stay-at-home New Englanders, **Albert H. Spahr** continues his farm activities in North Egremont in the Berkshires, in spite of a hip that was broken three years ago. Last summer 14 children and grandchildren under eleven visited the farm and certainly kept him on his toes. I find that six can do the same to me at Plymouth; quite likely one or two under four can do the same to other '96ers. Although children may and certainly do disturb the even tenor of our ways, maybe we receive as much benefit from their association as if we followed the Ponce-de-Leon quest in Florida. . . . **Walter S. Leland** is back at his office in Emeryville, Calif., on a half-time basis; he has mostly recovered from a coronary attack that started last March. He is our youngest member—he will be 86 March 13. . . . **George E. Harkness** was 90 January 15; we trust that the class felicitations came to him.

**John S. Eynon** still favors San Diego over the rest of the United States. He continues to keep going as fast as discretion permits; but this winter he has had to stop for eye treatment. We all hope that the operation will restore normal vision. . . . **Samuel T. Smetters** and **Karl A. Pauly** greet the class with best wishes for the holidays and the New Year—one from Chicago and the other from Union Street, Schenectady. . . . **Mayo** writes from Foxcroft, Maine, that his eyes are beginning to fail, but he is able to write a note. . . . While M.I.T. has been recognized as a most distinguished institution of science and engineering for some years, Boston is recognized as a foremost medical center. King Saud, of Saudi Arabia is now, in mid-January, convalescing at the Copley Plaza Hotel after a protracted stay for stomach and eye treatment at the Peter Bent Brigham Hospital. His son is at the Children's Hospital. . . . Come to Alumni Day in June and see Boston, Cambridge and '96 at the luncheon.—**James M. Driscoll**, Secretary, 129 Walnut Street, Brookline, Mass.; **Henry R. Hedge**, Assistant Secretary, 105 Rockwood Street, Brookline, Mass.

## Deceased

**ERNEST A. BRAGG**, '98, Aug. 17\*  
**WILLIAM BREWSTER**, '98, Aug. 4\*  
**DUNCAN C. MCLEAN**, '99\*  
**RALPH H. PINKHAM**, '99, Dec. 1  
**WALTER H. SUTLIFF**, '99, Oct. 1\*  
**FREDERICK A. WATKINS**, '99, Sept. 28\*  
**ALDA WILSON**, '99, July 25, 1960\*  
**DOUGLAS C. JILLSON**, '01, Feb. 4\*  
**LYDIA G. WELD**, '02, Jan. 1\*  
**JOHN W. REGAN**, '03, Dec. 21\*  
**EDWARD T. BARRON**, '05, Oct. 23\*  
**FLETCHER H. BURKE**, '05, July 22\*  
**JOHN M. MORRIS**, '06, Nov. 18\*  
**EDWARD H. MARSH**, '07, Dec. 6\*  
**STUART L. HENDERSON**, '10, May 8  
**RICHARD H. RANGER**, '11, Jan. 3\*  
**NORWOOD A. HALL**, '12, Dec. 16\*  
**BERNARD H. MORASH**, '12, Dec. 26\*  
**HENRY C. SMITH**, '12\*  
**GEORGE A. LITCHFIELD**, '13, April 29  
**EDGAR MENDERSON**, '13, Sept. 30  
**CARL M. BERRY**, '14, Dec. 14\*  
**ALFRED E. B. HALL**, '15, Dec. 20\*  
**JOHN R. L. SANTOS**, '15, Dec. 12  
**AARON P. PRATT**, '16, Nov. 8  
**PENN L. CARROLL**, '17, Dec. 10\*  
**EARL F. ENRIGHT**, '17, July 17\*  
**DANIEL J. HENLY**, '17\*  
**HAROLD S. MARTIN**, '17, Nov. 26\*  
**CRESCENCIO F. GOMEZ**, '18, Sept. 7, 1960\*  
**EUGENE R. MANNING**, '18, Sept. 17, 1960\*  
**ROYAL BARRY WILLS**, '18, Jan. 10\*  
**EDWARD N. WINSLOW**, '18, Nov. 13\*  
**LEO E. BEAULIEU**, '19, Nov. 28\*  
**LEWIS E. HARTMAN**, '19, Dec. 26, 1960\*  
**TRISTRAM J. CAMPBELL**, '21, Dec. 7\*  
**THOMAS F. MURPHY**, '21, Dec. 7\*  
**EUGENE R. RUSHTON**, '22, Jan. 31, 1960  
**MATTHEW H. CONNORS**, '23, Oct. 20\*  
**MRS. GLEE M. BARTER**, '24

**FRANK N. S. THOMSON**, '25, June 2, 1960\*  
**FRED W. WATERMAN, JR.**, '25, Nov. 5\*  
**GILBERT G. EMERSON**, '27, Jan. 1  
**FRANK A. THAS**, '28, Sept. 11\*  
**CLEON J. GENTZKOW**, '29, April 8\*  
**MELVIN E. MEISTER**, '29, March 19\*  
**CARL G. SCHESCH**, '29, Oct. 25\*  
**ROBERT J. FOSTER**, '30, Aug. 29  
**JOHN A. JOHNSTON**, '30, Nov. 20  
**CLAUDE H. BENNETT, JR.**, '31, May 15\*  
**RICHARD R. BROWN**, '35, Oct. 30  
**E. OSKAR HAKALA**, '35, April 15  
**FRANCIS T. AKIN**, '38, Nov. 25\*  
**ALBERT W. GABRIEL, JR.**, '39\*  
**JOHN J. HESS, JR.**, '43, Jan. 26, 1961\*  
**ALEXANDER D. KNOX**, '45, Dec. 2, 1960

\*Further information in Class News.

## Class News

## '95

A member of our '95 Eighty-Plus Club asked what happened to the Class of 1895 Memorial Fund of \$25,000 given on our 50th Anniversary, income to be used only to provide scholarships to suitably qualified descendants of members of the class. The balance of unexpended income in any year was to be added to the Technology Loan Fund. Thanks to the kind assistance of Mr. Thomas P. Pitre, Director of Student Aid, we learned that no



On January 2 we were told by R. W. Pratt of Kansas City, Mo., of the death by a cerebral hemorrhage of our classmate, **Gilbert Homer Pratt, V**, who for many years lived in Gloucester, Mass. R. W. Pratt, born in 1900, was Gil's only child. After many years with Wallace and Tiernan, Gil retired about 15 years ago. His son is still with that company and promised to send me more information about his father later. . . . Judge **W. Charles Dunn, II**, of Lock Haven, Pa., sent in December an obituary of Mrs. Irenée du Pont, that appeared in the Philadelphia Inquirer of November 30. Quoting one paragraph of Dunn's letter: "Irenée founded a Cancer Research Foundation at Newark, Del., amounting to three million dollars and has asked me to be consultant on radiation and photosynthesis of plant life, which I have been interested in for 40 years or more. His biochemist told him that I am an authority." This recognition was doubtless a gratification to our classmate Charles. An intimate friend of Irenée, Charles reports that he is not in good physical condition but is able to be taken on long drives nearly every day. The Inquirer article follows: "Mrs. Irene du Pont, wife of the former president of the E.I. du Pont de Nemours Company, died Tuesday at her home in Granogue, a Wilmington suburb. She was 84.

"Mrs. Du Pont, the former Irene Sophie du Pont, married her distant cousin in 1900. He was president of the firm from 1919 to 1926, vice-chairman of the board of trustees from 1926 to 1940 and is currently a company director.

"An active philanthropist, Mrs. Du Pont established Camp Landis, near Centerville, Del., where blind residents of Delaware are given two-week free vacations. She was a past chairman of the Delaware Commission for the Blind. She was a major contributor to the Episcopal Diocese of Delaware and helped finance Episcopal projects nationally. She was particularly interested in the Episcopal National Cathedral in Washington and the St. Andrew's School, at Middletown, Del.

"Mrs. Du Pont contributed to the \$200,000 Irene S. du Pont Library, currently under construction for the Sunney Hills School and Sanford Preparatory School, near Hockessin, Del. She contributed \$50,000 toward construction of the \$115,000 St. James Episcopal Church, Newport, Del. Mrs. Du Pont served as an honorary director of the Wilmington Society of the Fine Arts.

"Surviving, besides her husband, and a son, Irenée, Jr., are seven daughters, Mrs. Crawford Greenewalt, wife of the present Du Pont Company president; Mrs. Robert B. Flint; Mrs. Ernest N. May; Mrs. Colgate Darden; Mrs. Henry H. Silliman; Mrs. Philip G. Rust; and Mrs. J. Bruce Bredin. Services will be held at 2 P.M. Thursday at the Episcopal Cathedral Church of St. John here. Burial will be in the family cemetery at Greenville, Del."

## Happy Birthday

Congratulations are due in March for 8 and 14 Alumni about to turn, respectively, 85 and 80, as listed below with dates of birth.

March, 1877—**BATISTA P. SANCHEZ**, '99, on the 9th; **WILLIAM C. TWIEG**, '03, on the 14th; **HARRISON A. WHITNEY**, '04, on the 20th; **CHARLES R. GREENLAW**, '99, on the 22nd; **ALFRED DEW. NUTTER**, '01, on the 24th; **GEORGE W. BLOOD**, '98, on the 26th; **JAMES C. DRYER**, '99, on the 27th; and **CLIFFORD H. SHIVERS**, '01, on the 29th.

March, 1882—**STILES O. CLEMENTS**, '08, and **HERMAN EISELE**, '05, on the 2nd; **FRED H. ABBOTT**, '05, and **PATRICK J. SULLIVAN**, '05, on the 10th; **FRANK A. H. KELLEY**, '06, on the 12th; **LOUIS H. G. BOUSCAREN**, '04, on the 13th; **HERBERT K. DRAPER**, '04, on the 16th; **ROWLAND G. RICE**, '04, **SPENCER A. CUTTING**, '06, and **JOHN V. VREDENBURGH**, '04, on the 17th; **CLARK D. SIMONDS**, '04, on the 20th; **CHARLES L. DEAN**, '05, on the 24th; **GEORGE H. GARCELON**, '03, on the 26th; and **ROBERT FAULKNER**, '04, on the 31st.

The following note from Charlotte **Daniell** explains why her husband, **Jere**, has been unable to be more active as assistant secretary. "If you knew how often I have meant to write you, I think you would forgive me for this long lapse. Jere has not been well for over a year—in and out of the hospital four times since June with hardening of the arteries—little strokes, so called. All this plus my critical accident. Jere is so sad not to be able to help you, etc." . . . We also appreciated holiday greetings from **Pete Noble** and the **Wadleighs**.—**John P. Ilsley**, Secretary-Treasurer, 26 Columbine Road, Milton 87, Mass.

## '98

Our officers look forward to and appreciate cards, notes, letters, etc., from our classmates or their wives wherever they may be. Such a card, a Christmas and New Year's one, was received by **Ed** from **Gorham P. Stevens** from Athens, Greece. This card shows a drawing of the restoration of the Trojan Horse sculptured in bronze, now in the Acropolis at Athens. . . . Also Christmas and New Year's cards from both **Roger W. Babson** and **Carl S. High**, in the deep south of Florida, and from **Robert Lacy**, farther north in Baltimore. Thanks to all. . . . **Willard B. Nelson** of Baldwin, N.Y., sends a greeting card with considerable personal information. He tells us he "is still active and bowling with a club, as he has for 55 years in the winter months. In the summer he enjoys himself with his boat and visiting with friends and with his family of three grandchildren and three great-grandchildren." This is evidence that Willard is one of the many still-vigorous members of our class. It foretells a large gathering at our 65th. . . . A Hudson, Mass., news item of June 22, 1961, forwarded from The Tech Review, informs

us that 1898, 1899 and 1916 came back to Captain and Mrs. **Fred B. Dawes** in the spring of 1961. It marked the 63rd anniversary of Fred's graduation from M.I.T.; their 62nd wedding anniversary; and the 45th anniversary of his command of Company M, 5th Massachusetts Volunteer Militia at the Mexican border. They have two children, Robert of Hudson and Mrs. Mary Steele of Newbury, and three grandchildren. This item is somewhat belated, but we are proud to include it at this time in the class notes.

Our secretary, Ed, is in receipt of a letter dated December 14, 1961, from Jean, wife of our former class secretary **Arthur A. Blanchard**. Jean, who now lives at 25 Evans Road, Brookline, Mass., tells us that she and Arthur (now deceased) have a grandson and namesake, now a freshman at M.I.T. His father, Malcolm, their son, is a contractor and builder in Portland, Ore., whose ads have appeared in The Tech Review. Arthur A., the 2nd, is 6 feet, 4 inches tall and his hobby is swimming, in which sport he took several medals at a recent Tech meet. Jean further adds that he is ready to give up this hobby, however, for much needed time for study. Thanks Jean, for this interesting news. We know that your husband would have been very proud, as you are, to know there is a namesake still carrying on at Tech.

We regret the passing on August 4, 1961, of our classmate **William Brewster**, while visiting a granddaughter in Wooster, Ohio. An obituary notice in the Lewisburg, W. Va., paper, together with a personal letter, was furnished by his daughter, Mrs. Hoyde, of Daytona Beach, Fla., and reads in part: "Mr. Brewster, since his retirement as an engineer with the U.S. Bureau of Roads, had been living in Daytona Beach and Lewisburg. For many years he was stationed at Lewisburg and later in Charleston. He was born in Plymouth, Mass., was a graduate of M.I.T., a member of the Sons of the American Revolution, the Society of Mayflower Descendants, Society of Civil Engineers, life member of the W. Virginia Society of Professional Engineers, the Masons and the Elks. Surviving are two sons, one daughter, twelve grandchildren and seven great-grandchildren. The funeral and burial were in Massachusetts." . . . Also we regret the passing of our classmate **Ernest A. Bragg** on August 17, 1961, at Milford, Mass., at the age of 91. We quote in part from the Boston Herald of August 19: "Although born in Holliston, he had lived in Milford for 53 years. He was a photographer for the Draper Corporation, Hopedale, for many years. After his retirement several years ago, he wrote histories of the granite and shoe industries of Milford, a history of the Braggville Section and a book of poetry and prose. For 34 years he was treasurer of the trustees of the Methodist Church of Milford where he also was Sunday School superintendent. He was a past grandmaster of the Odd Fellows Lodge and member of the Masonic Order, Knights of Pythias and Order of the Eastern Star. Surviving are two sons, both doctors, two daughters, nine grandchildren and three great-grandchildren."



**Joseph C. Riley** and **Fred A. Jones** represented the class at the funeral services in Milford. In lieu of flowers, the class sent a donation which, at the family's wish, will go toward a scholarship sponsored by the Morgan Memorial.

We read so much about atomic power for war, it is good to read accounts of this power for peaceful uses. Our secretary, Ed, has called attention to an ad of the investor-owned electric light and power companies appearing in the Reader's Digest of last December as follows: "Atomic Electric Power Is Here, A Peacetime Dream Come True.—On this quiet New England river you see just one of the American plants that are now producing electricity from the power of the atom. (Picture in the ad shows an illuminated plant reflected in the river at Rowe, Mass.) Operated by the investor-owned electric light and power companies, they form a striking demonstration of America's use of 'Atoms for Peace.' Today atomic power is actually cooking suppers, running television sets, heating, lighting and cooling for many home and business customers of the investor-owned electric companies. These companies are already operating five atomic electric plants. They are spread across the country from New England to California, and more are being built. All over the country, these companies carry on research and development on new ways to produce electricity. It is part of their nationwide program to make certain America always has a plentiful supply of power. They can supply all the individual electricity the future will call for." Perhaps we are not fully informed on this live subject and of the importance it is beginning to play in our lives. Although it may not be pertinent as a class note, it can be refreshing to us all to read what the engineers of today are accomplishing.

—**Frederic A. Jones**, Assistant Secretary, 286 Chestnut Hill Avenue, Brighton 35, Mass.; **Edward S. Chapin**, Secretary, 271 Dartmouth Street, Boston 16, Mass.

# '99

**Frederick Arthur Watkins**, 86, died September 28, 1961. A course II graduate, he represented several electrical manufacturing firms prior to his retirement about 10 years ago. Fred enjoyed the class reunion with us in 1956. He was very active in the work of the Presbyterian Church throughout his life: trustee and treasurer of the Highland Park Church; honorary director of the Presbyterian Home in Evanston; president of the Laird Settlement House in Chicago; interested in the Kammerer Orphanage in Assumption, Ill. Fred was a life member of the Chicago Historical Society and of the Art Institute of Chicago. He was an early member of the Exmoor Country Club and a former director of the First National Bank of Highland Park and of the Highland Park Hospital Foundation. He is survived by his widow, Elsie, his daughter, wife of Francis D. Weeks, '31, three grandchildren and three great-grandchildren. . . . **Walter Hannen Sut-**

**liff** passed away on October 1, 1961. After receiving his degree in architecture, he joined the Bolton Pratt Construction Company in 1907 and was treasurer at the time of his retirement in 1955. Walter was a member of the famous Banjo Club which gave us so many enjoyable concerts, and he often recalled his "Grand Days at Boston Tech." . . . The Post Office has returned my letters to **Duncan C. McLean, II**, and **Miss Alda Wilson, IV**, marked deceased. Information about these classmates will help me prepare suitable notices for The Review.—**Percy W. Witherell**, Secretary, 84 Prince Street, Jamaica Plain, Mass.

# '01

When you read these notes you will have received the annual class letter. Therefore, I will be brief. I have to report the death on February 4, 1961, of **Douglas Jilison**. This news came through **Ed Davis**, but I have no further information. . . . **Phil Moore** is very good about sending in news. He sent a clipping in November which said that the Franklin Institute in Philadelphia was awarding its Vermilye Medal to a retired chairman of the Standard Oil Company of New Jersey. The medal was founded in 1937 by **William M. Vermilye** (who died in 1944), a New York banker and member of the Franklin Institute's board of managers. It is awarded for achievements in industrial management. . . . I will remind you again that if you want news of the class, you will have to supply the material; otherwise, no notes.—**Theodore H. Taft**, Secretary, Box 124, Jaffrey, N. H.

# '02

**Lydia G. Weld**, Course XIII, died in San Francisco on January 1. She was the first woman to receive a degree from the Department of Naval Architecture and Marine Engineering and one of the first woman to receive an engineering degree from any school in the United States. She started her professional career in 1903 with the Newport News Shipbuilding Company where she was one of five "charge men" under the chief draftsman, Engine Division. It was the duty of the division which she headed to get out finished plans of all machinery as installed in all naval ships. This required a lot of tracing and checking on the ships and as time went on the work increased in volume and the number of workers in her division rose. She found the work interesting and the company good to work for. With the approach of World War I, the yard activity greatly increased and the work became more strenuous. Time was the essence of the contract and work went along at full speed. The winter of 1917 was a terrible one; she became a victim of tonsillitis and sore throat and had to quit. In January, 1918, after a stay in a hospital in Connecticut near her sister, she went West and began the development of her brother's 320-acre ranch in

Antelope Valley, 80 miles from Los Angeles. She had been there but four months when she was asked to go to San Francisco to help set up the offices of the Emergency Fleet Corporation on the West Coast. After devoting two months to getting the office started, she returned to the ranch and operated it from 1918 to 1933. She applied herself to ranching with the same vigor she had shown in shipbuilding, cleared the land of sagebrush, drove wells, and got the land into alfalfa. That the ranch prospered is shown by the fact that she gathered in some 204 prize ribbons in such varied lines as fruit, grains, poultry, and animals. At the same time she took an interest in community affairs such as the Farm Bureau, school board, etc. When the ranch was sold in 1933 she retired to Carmel and built a house overlooking the Pacific on land which she had purchased some years earlier. Here she got into community life, joined the League of Women Voters and became a member of the Advisory Committee to the County Zoning Committee. When the second World War came she sought to do her part, was advised to take a job in the shipyards, and became a senior draftsman, Engine Division, Moore's Dry Dock Company, Oakland. After 30 months she again retired to Carmel. She remained active there in local affairs until about three years ago when she moved to San Francisco where she had many friends. There she lived where she could see her beloved ships passing in and out the Golden Gate and when she wished, with the aid of binoculars, could identify by the funnel markings the line to which they belonged. She was an ardent baseball fan and stamp collector. Miss Weld was a member of the American Society of Engineers and the Society of Women Engineers. She leaves many nephews and nieces. Committal services were held in Boston, January 27.

Thanks to Roy H. Allen, '05, of Banning, Calif., I have a clipping from the Phoenix Arizona Gazette which tells of the hanging of a portrait of **Louis S. Cates** in the Phoenix Art Museum last November. The portrait was presented to the museum by Mrs. Cates. . . . **Robert S. Baldwin** now lives with his son at 81 Benjamin Road, Belmont 78, Mass. . . . Plans for our 60th Reunion are progressing; if you want more information drop me a postal.—**Burton G. Philbrick**, Secretary, 18 Ocean Avenue, Salem, Mass.

# '03

Your secretary thought it would be of interest to our classmates to present here the distinguished list of "Happy Birthday" members who have accomplished their 80th milestones. Those born in 1880: Roger D. Babson, II, October 7; James W. Welsh, VI, October 20; J. Russell Jones, II, November 15; Miss Alice F. Blood, V, November 25; George B. Wood, II, November 28; William M. Gilker, VI, December 13; Otto C. Steinmayer, V, December 18; Stanley A. Foster, X, December 29; Howard T. Graber, V, December

29. Those born in 1881 are Fred B. Crosby, VI, January 16; Harold Osborn, VI, February 19; Louis B. Rapp, III, February 3; Edmund A. Garrett, II, March 5; Hewitt Crosby, XIII, March 7; William O. Eddy, VI, March 18; Daniel A. Smith, VI, March 29; Clarence M. Joyce, V, April 1; John J. A. Nolan, V, April 3; George E. Kershaw, XIII, April 4; Oliver P. Scudder, XIII, May 3; Herbert M. Morley, VI, June 1; Howard S. Morse, I, June 21; Benjamin D. Solomon, VI, July 2; Philip B. Rice, VI, July 22; John J. Dooley, VI, July 26; Andrey A. Potter, VI, August 5; Leroy L. Hunter, I, October 20; Charles B. Cox, I, November 4; William V. McMenimen, I, November 23; Robert J. King, III, November 29; Robert R. Jordan, II, December 26. Born in 1882 were: Richard M. Lawton, I, January 1; George C. Capelle, XIII, January 8; Harold L. Norton, III, January 10; and J. Howard Pew, II, January 27.

**John W. Regan, II**, died at his home in Miami Beach, Fla.; the burial service took place at the cathedral on December 21, 1961. He was a graduate of the Boston English School in 1890 and of M.I.T. in 1903. A year later he received his master's degree from Harvard University. From 1907 to 1925 he supervised the mathematics department at the Charlestown, Mass., High School. He then became headmaster of Dorchester High School for the next 20 years until his retirement, completing 40 years with the Boston School system. He moved to the Palm Island section of Miami in 1949. He leaves his wife, Mary (Sullivan); two sons, Dr. Robert W. Regan of San Mateo, Calif., and Dr. John W. Regan, Jr., of Washington, D.C.; a daughter, Miss Mary J. Regan, a humanities instructor at the University of Florida; and eight grandchildren.

Our class members residing in realms distant from Cambridge will be thrilled to learn of another striking addition to M.I.T. The building will be located on the M.I.T. campus north of the Institute's Hayden Memorial Library, on Memorial Drive. The \$5 million structure will be financed through a \$6 million grant for building and equipping the Centre, made by Mr. and Mrs. Cecil Green of Dallas, Texas, to the M.I.T. Second Century Fund. The building will be approximately 50 by 100 feet and will rise 20 stories to a height of over 300 feet. It will be the tallest building in Cambridge. Its completion is scheduled for the summer of 1963.—**John J. A. Nolan**, Secretary, 13 Linden Avenue, Somerville, Mass.; **Augustus H. Eustis**, Treasurer, 131 State Street, Boston, Mass.

'04

New Year's Day has departed into the past, but we wish you all the best of everything for 1962, and we thank all of you who remembered us with Christmas cards. Information on most of them was rather meager, but there were a few items which may interest you. . . . **Maynard** and **Martha Holcombe** report from Florida, but there was nothing said about an

'04 get-together—another sign of age. Incidentally, recent weather reports show Boston warmer than Miami, so why go to Florida? A prospective great-grandchild may trigger a visit of the Holcombes to Boston. . . . **Frank H. Davis** reports his attendance at a big Technology meeting in Detroit. Perhaps you saw his noble form in a recent number of *The Review* which mentioned this meeting. . . .

**Clarence B. Williams** and **George K. Kaiser** each mention the possibility of coming to Boston next summer, which is a noble idea. . . . We were sorry to hear that **Bill Whitaker** is not very well. We had a nice card signed by Mrs. Whitaker. Also cards from **Stan Skowronski** and **Harry** and **Glendora Rollins**. . . . The **Bob Phinneys** included a brief letter with their card. They report that Bob, Jr., who received degrees at M.I.T., earned his Ph.D. at Cal Tech last June and is now on the research and teaching staff there. Their younger son, Stephen, is studying at the University of Rochester. After seeing young Bob get his degree in Pasadena, the Phinneys returned to Rochester via Yosemite Park, Salt Lake City, the Grand Tetons, Yellowstone Park and Black Hills. While in California they called on the **Ralph Haydens** at Los Altos. In September they made a visit to Maine. . . . Two months in a row without any obituaries, so there is something to be thankful for.—**Carle R. Hayward**, Secretary, Room 35-304, M.I.T., Cambridge 39, Mass.; **Eugene H. Russell, Jr.**, Treasurer, 82 Devonshire Street, Boston, Mass.

'05

Wishing my classmates a Merry Christmas at the time I was writing Class Notes for the December issue (October 12) seemed rather asinine, so I waited until the middle of December, then mailed just over 100 Christmas greeting cards to all on my "active list," each carrying a personal note plus, of course, a mild suggestion as to news for *The Review*. Rather commercial, perhaps, but the Christmas spirit was genuine, and class secretaries have to have a special license to cajole, wheedle and bamboozle classmates into writing. The results were very satisfactory. I received more than 60 cards, many containing notes of interest regarding themselves, their families, grandchildren, great-greats, etc. Many of these notes asked questions, which I have been answering ever since. Lack of space prevents publishing all of these notes, but I have condensed many and give you here-with a summary. Isa and **Ed Barrier**: "Forecasts of early snow storms have caused us to leave for Florida earlier than usual. Our address will be 318 North Washington Drive, St. Armanda, Sarasota, Fla." . . . **Harry** and **Katherine Kendall**: "We are well and happy in spite of the fact that our joints need re-babbling." . . . **Roy** and **Grace Allen**: "When we passed through Carmel last summer I phoned **Charlie Dean**. He was not home, but his wife said both he and she were fine. Certainly her voice sound-

ed like that of a young woman of 20. Last week we had a nice visit with **Hallet R. Robbins, I**, in Phoenix. He appears well and happy and urged us to come and live at his very pleasant retirement home, but we have not made up our minds to give up our home yet. Our plans had been to drive East this past season, but when the time came we did not feel up to driving so far. We still hope to do it next year." . . . **Leslie Clough**: "Since losing my dear wife, more than six years ago, I have lived alone in spite of my three sons' protestations. I have a heart condition that keeps me pretty well tied to the mast at home, but I am happy withal and glad to be alive. I haven't left Weymouth for two years or more but do use my car daily, here in town." . . . **Chester Shaw**: "As you probably know, I became a trailerist nearly 12 years ago. Over the years I have towed one almost 38,000 miles, regarded as modest by dyed-in-the-wool nomads. Over the years the states have demanded more rigorous observance of their 'overlength' laws, and as our outfit is about 52 feet overall, and it is a nuisance to obtain permits, we bought a travel trailer about seven years ago, and no longer tow the larger one. We live in it in the winter, leave it in Florida permanently, and travel in the smaller one in the summer. So it can be said that I live in a 'mobile home.' We have never spent a summer in Florida. On the whole, I think that we find our summer traveling more interesting. Our itineraries are most flexible. Once, when headed for the North Carolina Mountains, a 50-mile detour in a driving rain turned us about, and we sojourned at Cape Hatteras. Once we started for a town in Central Florida, met some trailerist friends, and ended up with them at Key West. We have visited historical sites, from St. Augustine to the Oregon trail, and we have enjoyed the fruits of many places, such as the melons in Colorado, and the grapes and peaches only this summer in the finger lakes region of New York."

**Joe Daniels** says, "I was going to declare a moratorium and rest this year from Christmas cards, but I can't resist answering your card. I find myself slowing down and not too eager to do many of the things I used to do. But, trying to write a history of one of our early coal-mining towns in Washington keeps me busy on library search, a pastime that is not too strenuous but is hard on the eyes. Maybe I'll get my material assembled early in 1962, then I can write! Our roses are just about gone; Christmas rose (hellebore) is out in wonderful style; we have a dwarf blue iris that defies the frosts; one *Sasauqua clematis* is in full bloom, and we have many other left over flowers." . . . **John Damon** wrote, "That virus infection that I picked up in Korea and thought I was over in three weeks really began to catch up with me on my way home from the Class Reunion in June 1960, and I am only pulling up slowly from its effects. My heart gave me a jolt coming up out of the subway with my bag that night. While I improved physically my head didn't work well and I got worse and worse until about September, 1960, when I hit bottom and



there was not much bounce. However, since then all the changes have been progress. My son Merrill has taken good care of me and life has, therefore, been quite pleasant but not as satisfying as I had expected retirement to be. Merrill completed the building and equipping of his 30-foot cabin cruiser, and we two and one of his pals, so as to have two young and agile members of the crew, took a 2,500-mile cruise in July and August to Prince Edward Island and back. Navigating in fog and jumping from Gaspé to Prince Edward Island out of sight of land had the flavor of adventure to us. Also stormy weather going up the St. Lawrence River gave us further excitement, but we came thru all right and on the last day, when we reached our home mooring, we towed two boats, about our size, to safety when they were in distress. One of them was in New York Harbor and the other was up the Hackensack River. All together, with a good share of fine weather, it was a very pleasant and healthful expedition. The whole trip was by the inland waterways—Hudson River, locks up to Lake Champlain and locks down to the St. Lawrence River."

**Robert F. Luce** tells us, "Our son Robert James Luce, who graduated from George Washington University here in Washington a few years ago, married Marilyn Dallas of Arkansas last March 4; they are living in this city." . . . **Norman (Ski) Lombard** sent extracts from a family Christmas letter: "Norman finally got the service clubs to set up a Broward County Joint Committee on Basic Citizenship. Then he told them, 'It's your baby; go to it!'. Without his pep it stalled somewhat; but now it shows signs of vigor. He set up a series of discussion meetings to consider some of the problems and issues that interest people here. He also speechifies and writes letters to the editor. He resigned from the executive committee of the Taxpayers League because it persisted in captious and negative criticism of public officials—a practice he deprecates as being detrimental to good government. His chess game is improving, thanks to the impetus given it by a game he is playing with his grandson by mail. A new grandson has appeared in Seattle. John Albert Lombard is named after his father and his great-uncle, Norman's brother." . . . **Bert Johnson** is "still plagued by abdominal malignancies. Two operations this year, a month in the hospital in midsummer and 5 days in November and December. Surgeon now says last operation cleared everything up." . . . The **Ben Lindslys** both "enjoyed receiving your Christmas Greetings which arrived a few minutes ago, and also to hear about Hub still going strong at 80! He has his share of that good old 'Horse Sense,' and the constitution of a horse to go with it. We are quite proud of our two great-grandchildren—they live in West Texas—boy, 4 plus, and girl, one minus." . . . **Hiram (Roy) Walker** wrote, "My wife passed away in April, 1958. I have been retired nine years and am still living a bachelor's life."

**Herman Eisele** is "still maintaining my office carrying on consulting work, although on a slightly shorter hour basis—

five and one-half days per week. I am nudging 80, but if I had time I would like to go back to Tech and take a few courses in electronics, computers and numerical controls which are all new since 1905. Remember me to **Gil Tower**." . . . From **Bob Beard** we hear, "Helen-Mar and I took a 10,466-mile zig-zag drive across the U.S. in September and October. We made about 40 stops to visit relatives, friends and old family homesites. On the way up the coast we visited Charlie Dean at Carmel, whom I hadn't seen since June, '05. He rode in a senior rodeo at 75, and is proud to be able to go hiking at his present age. I am still working on math models and designs. Will have an exhibit at National Council of Math Teachers at San Francisco meeting in April." . . . **Dick Senger** writes that "my calamity got me in January, 1957. Have about fully recovered, but am still limping and for my protection have to use a cane. Otherwise, I'm in good health. I got cold feet about traveling East this year. Hope to get East next year." . . . **Myron Helpert's** latest news is a great-grandson. "Father just served three years in Germany. Now called back as the baby was born."

For **Herbert S. Bailey** "this year has been full of blessings, especially the blessing of continued opportunities of service. What would become of us oldsters if we didn't find jobs that we could kid ourselves into thinking made us still of use to others? Pottery is my primary interest, and I spend much time at the College, making pots, firing kilns, and helping the students. The County Civil Service Commission and the School Board still take me over to San Bernardino several times a month. This year service on the committee to suggest a site for a four-year state college in our county gave me a chance to get acquainted with several interesting folks. The Chaffey College Board included me as one of the four citizens to receive their 'Reward of Merit' at commencement. There is a Shinto legend that at the creation of the world a god stirred the formless earth until it should become beautiful. God will continue to stir the earth until men learn to live in love and peace. May he stir your heart and mine with love that we may have the peace of Christmas through the year."

Lack of space requires the postponement of further comments until the April issue. I have the sad duty of informing you of the death on October 23, 1961, of **Edward T. Barron, III**, of Pittsburgh, Pa. Those of you who attended the last reunion at Oyster Harbors will remember that Ed and Lucy were in attendance there. I wish to express to her the sympathy of those '05ers who knew Ed. I received copy of a newspaper obituary, from which I quote: "Services for Edward Taylor Barron, retired chief metallurgical engineer for the U. S. Steel Corporation, will be at 2:30 P.M. tomorrow at H. Samson's, 537 N. Neville Street. Mr. Barron died unexpectedly Monday at home. He resided at 1165 Murray Hill Avenue. He was a graduate of Lawrenceville Preparatory School, attended Princeton University and was a graduate of Massachusetts Institute of

Technology. Mr. Barron was a member of the American Iron and Steel Institute, the American Institute of Metallurgical Engineers, other technical societies, and the Third Presbyterian Church here. Surviving are his widow, Lucy Wintringer Barron; two daughters, Mrs. Robert C. Colbaugh, of Fox Chapel, and Miss Ann J. Barron; a brother, Alexander J. Barron; and three grandchildren." . . . I also have notice of the death of **Fletcher H. Burke, III**, at Coral Gables, Fla., on July 22, 1961. I have a letter from the Public Works Department, Metropolitan Dade County, Florida, that he was employed by them at the time of his death. No further information is available.—**Fred W. Goldthwait**, Secretary and Treasurer, Box 32, Center Sandwich, N.H.; **Gilbert S. Tower**, Assistant Secretary and Treasurer, North Main Street, Cohasset, Mass.

## '06

We don't have "a pocketful of miracles" and the donor had not received nor read the "commercial" in the January class notes, but early in January I passed along a sizable check to boost the class total in the current Alumni Fund. So, if you haven't already done so, get your "mickle" to Chick Kane before June and help make the "muckle" for the class. Believe it or not, five bucks for 1962 class dues has also arrived! Thanks! And thanks too for all the Christmas cards, especially for the messages that many of them brought to Marion and me. **Nellie Cady** had recovered from a fall and was doing nicely she said, back in her comfortable apartment in Rose Villa, a retirement house on the Willamette River, near Portland. . . . The **Percy Tillsons** had made the trip to Mexico that he and Annetta had planned and he included a picture, to prove it, of a headland jutting into the Pacific off Acapulco. . . . **Bob Cushman** sent along his favorite toast to the retired: "Salud, poséites y amor y tempo para agustaslos." Reminds me of that familiar "O Tempora, O Mores." . . . **Bob Rose**, you might know, composed a poem to tell us he and Anne would not be sailing—excuse, motoring. No!—well, cruising south this winter. It perhaps proved to be a wise decision for during several days in January, you will recall, the deep south shivered; schools closed, pipes froze, and the youngsters made snowmen and coasted (in dishpans) in Mississippi and Alabama! . . . In a late December letter from **Abe Sherman** he said he and Sadie hoped to leave Rochester for Sarasota (same address) soon after New Year's. He had received a card from **Cy Young** from Savage, Minn., with a note that he was just out of the hospital, snowbound, and didn't know when he could start south. Hope Cy made it after the deep freeze.

One of the year-around residents of Lake City is **George P. Shingler, V**, who has good reason to be proud of his daughter Adele (Mrs. Richard B. Oberlin), a teacher in the Edgewood High School in Orlando. Adele is a graduate of Florida State University and in teaching physics



she is using the modernized system developed by the special committee sponsored by M.I.T. Because of her special qualifications and successful experience, George says, she teaches the unusual students. "They are proving to be a challenge to her and she is meeting that challenge." It seems like adequate proof when he tells us of four of her students passing entrance exams and being accepted for M.I.T. next fall. Four from one school is unusual, and one of the four has been granted a scholarship. Besides the M.I.T. four, other of her students will attend other engineering schools, including two for Georgia Institute of Technology. Like father, like daughter, for George had been a professor of chemistry for a dozen years or more at Emory University, an institution in or near Atlanta, founded in 1836. Through the years George has served his country in other ways too, as we expect to tell in detail in future notes.

Until yesterday (January 13) there was no death to report, but a letter from **Bill Abbott** changed the picture. He had been wondering why he had not received the usual Christmas card from **John M. Morris, VI**, or any letter previously, when a letter from John's married daughter reported his death last November 18, without further detail. Before the class notes will be due for the April issue I hope to obtain the necessary information to supplement available records and so to report his career in detail. . . . P.S.: After the above notes were mailed came an Alumni Association form reporting the death on December 10, 1958, of **Edward Burrowes Evans, IV**, probably at Bigras Islands, P.Q., which has been his address for the past nine years. The information was evidently received from a daughter whom we will try to contact for more details, and then include his career in future class notes.—**Edward B. Rowe**, Secretary-Treasurer, 11 Cushing Road, Wellesley Hills 81, Mass.

'07

The Boston papers for January 11 carried an account of the complete destruction by fire of the Hotel Englewood at West Yarmouth on the Cape. I am sure many of our present class members will recall that we held two reunions at this famous hostelry—our 9th in 1916, with an attendance of 34 and again on our 15th in 1922, with 38 men there. . . . A nice letter from **Frank MacGregor**, who lives in Tryon, N.C., suggests that I get from our present active membership a brief report as to what they are doing nowadays. We have covered, in the past, business and professional items; but now, with so many classmates retired, it would indeed be of interest to find out how you put in your inactive days, or perhaps very active days, in pursuit of a hobby that had been waiting for your retirement era. We who know Frank intimately are aware that he never suggests anything that he is not willing to do himself. So I quote from his letter: "It hardly seems possible that 14 years have gone by since I re-

tired from business; but such is the case, and they have been most satisfactory. I divide my time between my home in Wilmington, Del., and my winter residence here in Tryon, N.C. For the past year have been reading law, not with any idea of practicing, but as a pleasant occupation. Also studying electronics in order to understand what all these computers are about as well as the numerous articles on the subject. Some advances in physics and electrical engineering since our Tech courses about 55 years ago! At odd times some shop work and walks in the woods make a pleasant change. Have just read the book by your '07 author, **Carl Bragdon**, entitled, 'Metal Decorating from Start to Finishes.' An excellent and well-prepared book, and the chemical, mechanical and metallurgical angles are accurately covered. I had thought Carl had coined a new word but on leaning over the arm of my reading chair to Noah Webster's book, I found that 'thixotropy' was already known."

The Alumni Association sent me a clipping telling of the death of **Ed Marsh**, Course XI, in Chappaqua, N.Y., on December 6. I wrote to Mrs. Marsh on behalf of the class and expressed our sympathy to her and the family. Ed had one son, Lieutenant Commander Edward Marsh, Jr., and a daughter, Mrs. Laurence Fonda. Ed did not graduate with the class, and I find no record of his attending any of our class reunions or Alumni functions. I quote from the obituary notice: "Dr. Marsh was born in Oswego, N.Y., and studied at M.I.T. and Cornell University Medical College, where he received his degree in 1909. He received a Ph.D. in public health from New York University in 1921. A specialist in dermatology and syphilology, he was sanitary supervisor of the State Health Department and became secretary of the department in 1922. He was named deputy commissioner in 1931. Dr. Marsh served in the Army on the Mexican border in 1916 and through both world wars, retiring with the rank of colonel in 1946. After World War II, he was an honorary consultant in preventive medicine to the Army surgeon general.

Before these notes are published, you will have received from me a letter relative to our 55th Reunion at Oyster Harbors Club at Osterville on the Cape, June 8-9-10. Reading these notes will be a reminder to you to get it out and send me the reply sheet. There is no question that many of us are "living on borrowed time" and that the year 1967, the date of our 60th reunion, is a long way off. So determine that you will make the most of the present and be with many of your classmates for at least part of our 55th celebration.—**Phil Walker**, Secretary and Treasurer, 18 Summit Street, Whitinsville; **Gardner S. Gould**, Assistant Secretary, 409 Highland Street, Newtonville 60.

'08

Our second dinner meeting of the 1961-62 season planned for January 11, 1962, had to be canceled as we could not mus-

ter a quorum. Several of our regulars were in Florida while others were under doctors' orders to take it easy. The weather was rather cold and windy and home seemed a good place to stay. However, better luck next time, for our third dinner meeting which will be held on Wednesday, March 7, at the M.I.T. Faculty Club in Cambridge at 6 P.M. Hope the weather will be propitious and that our ailing brothers will be O.K. again. Received an interesting letter from **Winch Heath** following his arrival at his new home in Seattle, Wash. They left Wellesley on August 15, 1961, and arrived in Seattle September 9, 1961, a journey of 4,200 miles. As Winch wrote: "never leaving the East Coast by car before, never seeing a sign 'seven miles downhill' before, mile after mile in the Midwest without meeting a car or being passed by one, was quite an education." Their new home is on a hillside facing east about 100 feet above and 800 feet from Lake Washington; a stretch of about 6 miles of the lake is visible from their living room window, also a view of the Cascade Range some 30 miles away and now snow covered. On a fine day, he can see Mount Rainer, some 50 miles away. Their daughter's house is about 200 yards below theirs. Looks like Winch is "sitting pretty." His new address is 1616 39th Avenue, Seattle 22, Wash. Why not drop him a note. . . . How about the Alumni Fund? Have you made your gift? If not, please do so soon. How about the M.I.T. Boston Luncheon Club meetings at the Union Oyster House? The next luncheon is March 15. Why not come and see old friends, get a good lunch and hear a fine speaker?—**H. Leston Carter**, Secretary, 14 Roslyn Road, Waban 68, Mass.; **Joseph W. Wattles, 3d**, Assistant Secretary and Treasurer, 26 Bullard Road, Weston 93, Mass.

'09

For a number of years **John F. Davis, II**, has served as a member of the Cambridge Water Board. Recently he submitted a report of something like 2,000 words on the major improvement projects in the water department for 1961 to the Cambridge City Council at the board's annual dinner at the Hotel Continental. The report was printed in the "Cambridge Chronicle" with John's picture. . . . We received a Christmas card from **Mel Weill, II**, stating, "Have been to Mexico where I spent a pleasant day with **Salvador Altamirano**." . . . On the back of the Alumni Fund letter sent by **Art Shaw, I**, to **R. W. Williamson**, Columbia, Tenn., there was a note from John A. Cobb, Jr., of the Columbia Power System, reporting Williamson's death on May 19, 1961. Our records show that he came to the Institute from Columbia but was with us during the first year only. In 1921 his address was New York City. He joined the Alabama Power Company at Birmingham in 1925, the Gulf Power Company at Pensacola, Florida, in 1934, and the Columbia Power System in 1940. We have written to his widow expressing the

sympathy of the class as well as our own. —**Chester L. Dawes**, Secretary, Pierce Hall, Harvard University, Cambridge 38, Mass.; Assistant Secretaries: **George E. Wallis**, Wenhams, Mass.; **Francis M. Loud**, 351 Commercial Street, Weymouth 88, Mass.

## '10

**Bob Burnett** and his wife celebrated their 50th wedding anniversary last April. Our heartiest congratulations and may they have many years more of health and happiness. Bob's letter follows: "**Hal Billing**'s report of his 50th wedding anniversary reminds me that I should report our 50th anniversary which occurred April 13, 1961, and was celebrated at the home of our second son, Richard, located near Oneonta, N.Y. The enclosed Christmas card shows our entire family, all of whom were able to get together for the occasion. Our oldest grandson is now a senior at Wesleyan and one of the five members of the singing group, The Highwaymen. Their records have had wide national popularity, especially "Michael," and the story of their success was written up in Time magazine a month or so ago." The photograph referred to in the letter is a gem, it is in color and shows the entire family.

I had a letter from **Clark Arkell** recently in which he states he is still active in business but has curtailed his office time to two or three days per week. . . . The following is from the Newark (N.J.) Sunday News: "**Martin F. Tiernan**, Chairman of the board of Wallace and Tiernan, Inc., of Belleville, will retire from that post effective January 1 and serve as chairman emeritus. Tiernan, who founded the company with Charles F. Wallace in 1913, is retiring for health reasons. Both he and Wallace will continue as directors." . . . **Dud Clapp** is now referred to as the Parish Poet Laureate by the First Church in Cambridge Unitarian. Dudley wrote a poem for the church publication titled "Peace Not Utopia." The subject as developed really gives one something to think about.—**Herbert S. Cleverdon**, Secretary, 120 Tremont Street, Boston, Mass.

## '11

**Dick Ranger**, VIII, of Newark, N.J., died January 10 at St. Michaels Hospital, where he had been since suffering a stroke December 26. He was credited with developing the first transoceanic wireless picture transmitter. His other inventions include the pipeless electronic organ, 1932; electronic chimes, 1933; radar developments from 1938 to 1944; airborne radio relay, 1942; magnetic recording developments, 1947, and a synchronized tape and motion picture sound device, for which he received a film Oscar award in 1956 and the Samuel L. Warner Award in 1957. He joined the Radio Corporation of America (RCA) in 1920 as a design engineer and began work on

radio transmission of photographs and ship-to-shore telephone communications. It was in 1924 that the first photograph facsimile was transmitted across the ocean from New York to London on his invention. He left RCA in 1930 and began his own practice as an engineering consultant; about 10 years later he formed Ranger-tone, Inc., and remained president of the firm until his death. He was organist and choirmaster at St. Mark's Episcopal Church, Newark, from 1924 to 1929, and at one time director of the Forest Hills Glee Club. During World War I he served in Europe with the Army Signal Corps. He returned to Europe in World War II, working on technical intelligence missions from 1944 to 1946. He held the rank of lieutenant colonel in the Signal Corps Reserves. He was a fellow of the Institute of Radio Engineers, and a member of the Royal Society, London. He is survived by his wife Laura, a daughter, two sisters and three grandsons. Our sincere sympathy goes to them all. The foregoing information is from the Newark Evening News, January 12, sent to me by **Erving M. Young**, and the New York Times, January 13, given me by **Emmons J. Whitcomb**.

**Bill Orchard**, XI, of Maplewood, N.J., has been recovering from surgery in the Orange Memorial Hospital. This news is from a clipping from the November 27 Newark Evening News, sent to me by Carole Clark of Glen Ridge, N.J., Secretary of the Class of 1921. . . . Following are quotations from the 1961 edition of the nice Christmas greetings brochures from **Ottillie** and **Paul Cushman**, VI, of 1212 Marlboro Lane, Nichols Hills, Oklahoma City 16, Okla. "We treasure the Christmas messages from all of you. We are well, although Paul had kidney stone attacks last spring, but none since April, and Ottillie had the spring flu. Paul is continuing work at Tinker Air Force Base, Midwest City, the L. and S. Bearing Company here, and the past year he has corrected Oklahoma University thermodynamics correspondence course papers. His name appeared in the 1960 'Who's Who in the Southwest.' Ottillie prepared 29 small Christmas gifts for patients at the Indian Tubercular Hospital at Talihini. Together we have been treasurers in one square dance club, and membership chairmen in another this year. We made three visits to the Eastern Star Home for the Aged at Guthrie, and as delegates attended the spring and fall central district square dance conclaves at the state's newest lodge at Lake Texoma Park, on the Texas-Oklahoma line: June 4 we drove to Massachusetts for Paul's 50th M.I.T. class reunion. The expressways and interstate connecting turnpikes through Illinois, Indiana, Ohio, Pennsylvania and New Jersey cut our travel time by a third. En route we stopped at Valley Forge. We returned by the New York turnpike, Canada and Detroit. We crossed the Welland Canal, part of the improved St. Lawrence Seaway, and saw a foreign ship come through. In Ann Arbor, we attended Ottillie's 40th University of Michigan class reunion. June 27 we took the special train with 250-300 others from the Southwest for the National Square Dance

Convention at Detroit, stopping in Chicago just to view, from the top of the new 41-story Prudential Building, the street, boulevard and neon lights, which extended as far as we could see. On exceptionally clear days Illinois, Indiana, Michigan and Wisconsin can be seen from there. The convention was held in Cobo Hall, Detroit's new \$54,000,000 civic center on the Detroit River. There were 18,500 dancers there from 44 states, including Alaska and Hawaii, four Canadian provinces, and Mexico, Saudi Arabia, Spain, Argentina, and Great Britain. From there our party also had a day at Niagara Falls. In October we attended a national M.I.T. Alumni dinner at Tulsa, with a program broadcast simultaneously in 45 cities." The foregoing quotes cover about one-sixth of the data in the five-page brochure.

Address changes: **Theodore J. Lafreniere**, XI, shown previously as Montreal 24, Canada. Add Quebec; **George B. Forristall**, II, from 147 Lowell Avenue, to 375 Newtonville Avenue, Newtonville 60, Mass.; **John D. Hassett**, V, from 74 Front Street, Worcester 8, to 13 Blithewood Avenue, Worcester 4, Mass.—**Henry F. Dolliver**, Secretary, 10 Bellevue Road, Belmont 78, Mass.; **John A. Herlihy**, Assistant Secretary and Treasurer, 588 Riverside Avenue, Medford 55, Mass.

## '12

Word has just reached me of the death of **Samuel S. Stevens** at his home 1117 Boylston Street, Chestnut Hill on April 6, 1958. . . . Another name that has to be taken from the class list is that of **Bernard H. Morash**. Bernard passed away after a long illness, although he had been active and was planning a trip to the West Coast to visit his married daughter this spring. I know Mrs. Morash will be glad to hear from any of you. Her address is Rosedale Court, Apartment 304, 30 Elm Avenue, Toronto, Ontario, Canada. . . . Another death is that of **Henry C. Smith** of Independence, Mo. Henry had won wide acclaim as the architect of the R.L.D.S. Auditorium and many other hospitals, churches and museums and large office buildings in and around Kansas City. From 1932 until his retirement he was under civil service with the U.S. Treasury, supervising construction of Federal buildings and improvements in a 10-state area. He is survived by his wife, Mrs. Mabel L. Smith, 3900 South Cryslar Street, Independence, Mo., a son and daughter, and five grandchildren. . . . Word has just been received of the death of **Norwood A. Hall**. Norwood led a very busy life. After leaving the General Electric Company, Hoist Division, he founded his own company, Electro-Lift, Inc. in 1932. He had a very successful business for the manufacture and sale of a wide line of electric hoists. He is survived by his wife, Dorothy, a daughter, Mrs. Charles Ridge, and four grandchildren.

**Frank J. Osborne** has recently retired as health officer for East Orange, N.J. He was tendered a large dinner at the



Hotel Suburban which was attended by about 250 of his friends and associates. Frank is widely known for his many "firsts" in public health in northern New Jersey. He was especially active in securing a purer milk supply and in the public health department was concerned with chronic diseases for the aged. During his tenure his health department won six awards in the U.S. Chamber of Commerce interdepartmental conservation contests—three first prizes, one honorable mention and one for meritorious achievement.—**Frederick J. Shepard, Jr.**, Secretary, 31 Chestnut Street, Boston 8, Mass.; **John Noyes**, Assistant Secretary, 3326 Shore Crest Drive, Dallas 35, Texas.

# '13

1962 is now with us and that great year for our Class of 1913 will soon be here. Remember our 50th Reunion, as you read this script, is only 465 days away when we shall all meet again at the Oyster Harbors Club. Not very far distant—about 15 months from now. **Geoffrey Rollason** always comes through with some worthwhile news, and he has quoted in part a letter which he received from "**Lammy**" **Lemaire**, Australia, and we re-quote: "Anyway, I still have hanging over my bed the delightful message you sent me from the New Ocean House, Swampscott, at the 35th Reunion of the Class of '13 by 61 of my old and real 'cobbbers.' It serves to remind me what a wonderful lot of chaps I was privileged to associate with at M.I.T., even if 'the Old Order changeth yielding place to New.' As I am in the dark as to your activities and hope to hear from you in the near future, perhaps a few words as to mine may interest you. I am still interested very much in immigration and am local president of the Good Neighbor Council, exhausting but enthralling work. It is my good luck to be invited to the Citizenship Conference each year at Canberra to discuss all problems associated with the Commonwealth. Judiciary, senators, premiers, labour leaders, chamber of commerce and manufacturers, ambassadors, church heads, etc., etc., are invited and the week acts as a guide to the Government in its policies. It is really most educational, and I always regard it as a great honour to be on the list. My health unfortunately, at long last, has started to go back on me. Last year I had two 'majors' and this year a coronary and a couple of anginas; but old soldiers never die they only fade away." Geof states that he feels "**Lammy**" is feeling the effects of the strenuous service in two World Wars. He has seen **Lemaire** once on one of his trips to Australia, but that was four years ago. . . . Geof has a couple of part-time assignments, so keeps busy, and of course he and his good wife will be with us in 1963. . . . Our classmate, **C. Lalor Burdick** of 4400 Lancaster Pike, Wilmington, Del., has been elected to the national board of directors of the Planned Parenthood Federation of America. **Burdick**, Secretary of the Polyfibers Committee at E. I. du Pont de Nemours, is director of

the Lalor Foundation, president of the Christian Foundation, and a trustee of the Delaware Academy of Medicine of the University of Delaware Research Foundation and of the Marine Biology Laboratory at Woods Hole, Mass. He has lived and worked in Mexico, Chile and Germany, and was an officer in the Ordnance Department, U.S. Army in World War I. He received B.S. degrees at Drake University as well as a B.S., and M.S. degree at M.I.T.; a Ph.D. degree at the University of Basel (Switzerland); an honorary D.Sc. at the University of Delaware. He is a member of Phi Beta Kappa; the Wilmington Club; Wilmington Country Club and many professional societies, including the American Institute of Chemical Engineers; and he holds a life membership in the New York Academy of Science. He is the father of two children. Well, **Burdick**, you have led and are still leading a very busy and worthwhile life. Congratulations.

**Harold E. Crawford** from Walla Walla, Wash., sends a postal: "Address of **Harold D. Marsh** is: 336 S E 49th Street, Portland 15, Ore. He has retired after many years as an architect in Portland. I hope to be at the Class Reunion in '63. Am still semi-active in my business (architect) Merry Xmas." Very nice to hear from you **Harold**. Thanks very much for **Marsh's** present address. See you at the 50th Reunion. . . . More \$2.00 news or notes: **Larry Hart** pens "Affectionate greeting to you and 'Roz,' in which **Larry** joins me." We are always glad to hear from **Larry**. . . . **Jack Horner** adds: "Hi **Phil**—here's your slug. Enjoy your class reports in the Bugle. Believe me, your efforts are appreciated." . . . **George Dempsey**, briefly: "**Phil**, kind regards." . . . **Percy Whitman**: "It is, of course, my fault that I haven't kept in closer touch with you and members of the old Class of '13. Distance is some excuse, but not a reason. I am still going to my office about every day. The reason why it isn't everyday is because we recently built a new home which is 50 miles away from my plant. The new address for your records is: 180 Emerald Bay, Laguna Beach, Calif. Give my best to everyone who may remember me. Best to you." . . . **Clarence Berry** writes and we quote: "Am pleased to send you my class dues. Hope I can see you at the 50th Reunion, that is if my legs will still hold me up. I have to use a cane now to get around since I have osteo-arthritis in my left leg. Have had to take things easy and can't do much traveling any more. I still can drive my auto, however. Other than my leg I feel fine. Hoping you are in good health." . . . **John W. B. Ladd** informs us that his new address is: 32 Cedar Lane, New Canaan, Conn. . . . **Victor Mayer** adds, "It's a pleasure." . . . **Allen Brewer**, one of our best letter writers of the class, informs us that he and **Maurine** are certainly very busy "beavers" with their prayers for rain but not hurricanes. Evidently, **Jensen Beach** didn't suffer the past fall any more than we did here in old Bay State. Again, **Allen** has been invited by the magazine "Industry" to write another series of articles on "Machine Tool Lubrication." The **Brewers** were fa-

vored with visits from their numerous grandchildren last summer. It appears that both **Allen** and **Maurine** are meticulous woodworkers so with their grandchildren made Xmas presents for the whole family and then completed that long-planned record cabinet. Many thanks **Allen**; we certainly appreciate your newsy letters. . . . Due to the several battles with old-age ills and because old Massachusetts has been having a milder winter than Florida, it is going to be impossible for us to vacation in Florida this year. In regard to the 50th Reunion, those present at our reunion last June, reaffirmed the decision of 1948 to engage the facilities at Oyster Harbors Club for June 1963. . . . "**Russ**" **Leonard** inserts, "If you happen to see **Phil Burt**, please say 'Hello' to him for me. Regards also to you." . . . **Frederick Rich** really wrote a very worthwhile letter and we quote: "Here's my \$2.00 check for the July, 1961-July, 1962 Class dues. Glad can do it. Bless the check and bless the men who remain representing class members of M.I.T. 1913. Glad to be able to remain myself. It seems a long, long time back. There is going to be a National M.I.T. Alumni meeting here in Miami, Fla., on the evening of October 19, and I hope and expect to be there to hear the voices of the men who are doing things today. As I look back on the lab days on Boylston Street, it seems like eons ago. How much has changed! I note a picture taken back in 1916 when M.I.T. men listened in on a National Telephone hook-up, and it takes me back to the very first transcontinental hook-up when **Fred Davis** of General Electric sat next with me listening to one station after another checking in, as one after another was cut in and the boosters took over. It was quite an event. Now, we bounce the voices off celestial man-made travelers in transoceanic communication. Some world! Then I recall as an early alumnus in New York, when clad in old Father Knickerbocker garb, I waved off the New York Alumni for Boston for reunion on boat via Cape Cod. Yes! fellows, those were all good old days, as I glance over my left shoulder at the merry, merry-go-round we call the calendar. Time has sped on. Now at 75 I know well that these have been good years. Today I am happy, though now willing cheerfully to let younger men with new visions see the things which remain undone. Do them better too, for they are working with the adjuncts which so many of the years of M.I.T. have made possible; and I believe with minds well equipped to meet the challenge of years ahead." Thanks, **Rich**. Let's hear from you more often.

**Bob Tullar** pens: "Glad to get your bill and to know you are still perking. Am looking forward to our 50th in 1963. I'm partially retired—working part-time seems to keep me in fine health and an extra buck has allowed some excursions that might otherwise not have been." . . . **George Bakeman**, happy as usual notes: "Apparently the mails are still going north in spite of the renewed gun fire between the Blue and Gray with the opening of the Civil War Centennial in



Richmond. So here is my check for another year. Love and kisses." . . . **Charlotte Sage** remarks "What ho! Greetings to your wife." . . . As always **Gordon Howie** keeps us informed of his yearly sojourn to 1421 South Betty Lane, Clearwater, Fla., for seven (five now) months. We quote in part: "Ethel and I certainly enjoyed our interim 48th reunion in June and thank you, Phil, President Charlie, and all the committee for a chance for a wonderful get-together with classmates and wives again. Those who could not be there missed a good time. Here's hopes to be at the 50th in June of '63." . . . Dean **Harry Bowman** inscribes his retired address: 7117 Wolfree Lane, Rockville, Md. . . . **Dave Stern** inquires "Phil—Haven't seen you at Boston Rotary." No, Dave, they have found a way to keep the boys down on the farm. . . . **Johnny Welch** enclosed a note: "Wish I could have been at the reunion this summer, but I am still on the job—but not as much as usual. Was at West Harwich with Frances in August. Regards to you and your wife." . . . A brief from **Dave Nason**: "If I feel as good in June, 1963 as I do now, I'll be there and try to add to the fun. Kindest regards to you and your bride." . . . We appreciate the good or best wishes from **Gardner Alden**: "During the period of five years that I have been retired I have found innumerable things to keep my hands and mind busy. It has been a thoroughly enjoyable and rewarding experience. I am looking forward, hopefully, to more of the same. I hope you and your family are well and will have a good winter. With kind regards and best wishes." Why don't you let the rest of us in on that "rewarding experience" and "more of the same," Gard? . . . So you merry-makers, we still need facts and fancies in the form of news of you, then we shall keep The Technology Review 1913 columns active. Lest we forget June, 1963, will be the date of the 50th Reunion for the Class of 1913.—**George Philip Capen**, Secretary and Treasurer, 60 Everett Street, Canton, Mass.

## '14

Although the note came to our class agent, it was nice to hear again from **Shepard Lee** who has been living in Santa Barbara for over 40 years. While current details are few, Shep tells us that he has been married and has three sons. How many of you now recall that he was one of our top class athletes? . . . As we've often repeated, just a note is enough and would always be welcomed by your classmates. . . . **Clarke Atwood**, who is now operating a splendid new inn at Katama Shores in Edgartown in Martha's Vineyard, has called our attention to the fact that his 100 accommodations would make it an excellent spot for our 50th Reunion. The color picture looks very enticing.

As your secretary has been at the Mayo Clinic for three weeks out of the past month, news items have been a bit more scarce than usual. As our daughter lives in Rochester, Minn., the word clinic

is not as serious as it sounds, yet quite sufficient. . . . Another of our classmates has passed on. **Carl M. Berry** died on December 14 at the Meadow Brook Hospital, Long Island, of a heart attack. Carl was a graduate in electrical engineering and first started with the firm of D.C. and W. B. Jackson. He later was employed as an engineer for the Mutual Insurance Company. Berry prepared at the Range Technical School of Cambridge and Rhode Island State College and was a member of Lambda Chi Alpha. He was interested in music and was a member of the Tech Orchestra. In 1924 he married Freda L. Merrill; they had two daughters. His brother, Clarence J. Berry, was a member of the Class of 1913.—**H. B. Richmond**, Secretary, 100 Memorial Drive, Cambridge 42, Mass.; **C. P. Fiske**, President, Cashmere, Paynes Bay, St. James, Barbados, B.W.I.; **H. A. Affel**, Assistant Secretary and Class Agent, R.F.D. 2, Oakland, Maine.

## '15

What a secretary! Is my face red for omitting **Clive Lacy's** name from those present at the Boston class dinner on October 6. My apologies to Clive, particularly when I know he made a great effort to be with us—cancelling another date to do it, ah me! Christmas cards from 52 classmates and their families from far and wide warmed our hearts with a pleasant feeling for these fine old friends. There were many beautiful cards with appropriate holiday greetings. Here are some of the personal messages. **Phil** and **Helen Alger's** annual poem is a colorful story of their flickering fireside and their two new grandchildren, Sarah and Philip. . . . **Herb Anderson** is still making a brave fight of it. "These days so many undone things have a habit of showing up, it just becomes boring to tell you about the series of tests I've been through. In the spirit of never giving up, I've attended a few white-tie activities with old friends and stayed up later than the good medicos liked. I hope to see you January 26." . . . Gladys and **Larry Bailey's** snow covered house on prettily named Elderberry Lane in South Duxbury looks comfortable for his retirement. . . . Elizabeth and **Douglas Baker** wrote "You should come to see us in the winter and know what Vermont is really like." But Fran and I prefer to wait it out until next summer and that fresh blueberry season up there. . . . The winter scene on **Wayne Bradley's** card looks just like his Forty Acres Inn at Pike, N.H. (Are you planning to give Wayne a little business up there next summer?) . . . Verta and **Jerry Coldwell** gave us some tips from their North Cape Cruise, as we hope to do the same cruise this summer. . . . Helen and **Otto Hilbert** are making the most of Otto's retirement with long trips: "We hope you had as pleasant a European trip as we had. We did not return until the middle of July and we saw so much that was new and interesting. We took some 600 pictures, and as we see them

we long to go back especially to India, Hong Kong, Bangkok, Japan and Hawaii. We plan to spend February and March in the Caribbean and April in Florida."

Fran and **Henry Daley** will be in New York in January so Henry won't miss the Class Dinner there. . . . Harriet and **Carl Dunn** write: "We are still active but feeling the passage of time. We will spend 10 weeks in Florida after the New Year and may get down East in June, but it's a long way to go for a cocktail party." . . . Retired **John Dalton** in Providence says he's not moving around much because he is so busy down there. Golf in the wintertime, John? . . . **Loring** and **Ruth Hayward**: "Well, the old guy with the scythe and the long whiskers is catching up on me fast. I have retired and am just loafing around." Is that bad, Loring? . . . A cheery and bright card came from Tess and **Gabe Hilton** in Clearwater, where they certainly were cheerful and bright to me last summer. From Hotel Montemar, Torremolinos, Malaga, Spain, Monsieur Signor **Ernie Loveland** wrote: "Fished Galicia and the Pyrenees east of Andorra until October 1, end of trout season. Stayed in the Pyrenees another 10 days tramping around the hills and admiring the beautiful scenery. Then the snow got one-third of the way down from the mountain top to our little village, and I got 'the Hell' out of there. Took a boat from Valencia to Majorca, taking the car with me and stayed two weeks in Majorca. Then returned to mainland and drove down here where I expect to spend most of the winter although I do have invitations for Christmas week in Casablanca (Morocco) and also in LaCoruna, Spain. Now planning to go to Serbia (Yugoslavia) late in February and fish there before returning to fish northern Spain again. May also fish in Austria. Here I am playing tennis, swimming (a little, the water is cold) and going to school—languages. What do you hear from **Charley Norton**? Hope you enjoyed your visit to Europe and sorry that we were not able to get together over here. Next winter I may spend some time in Italy. Drop me a line and tell me what you are doing with yourselves. Also my regards to the others in the class."

**Ken Johnson** retired March 15, 1961, and had some surgery. What a brave spirit and great sense of humor he has, to say "I feel fair but tire quickly. But enough of my woes—what's the loss of a few parts?" . . . **Pellian Mar's** son, Gilbert, his wife and children Sampson and Chris, sent a typically Chinese card from Formosa. . . . After 34 years in their big house in Plainfield, N.J., **Hank** and **Virginia Marion** have condensed their living into an apartment there. . . . **Ben** and **Lauretta Neal** had an unusual card with a clever lift up flag design. . . . Anne and **Al Sampson's** was the biggest with the most unusual and highly colored design we had. Small, Smith, Reeb and Draz, Cleveland architects announced on January 1, 1961, **Phil Small's** retirement and his retention as a consultant. With it Phil wrote: "The enclosed announcement which went out to clients

last spring explains what a lazy loafer I have become in my old age. I am only active enough to keep from going to seed. I am sorry I don't get to Boston so as to enjoy some of the 1915 fun and bend an elbow once in a while with some of the gang, but my travels take me to the Southwest and a warm sunny climate winter and spring. Best regards to you and any 1915ers you see." . . . Fran and **Ted Spear** had a pretty card with each letter of Noël printed in black on a square of a different soft color over-embossed with a gold floral design. . . . **Speed** and **Molly Swift** said they had six pheasants, like the ones on their card, at their feeding station, but hunters shot all but one. Too bad, for Speed and Molly do a great deal to care for many different animals up there on their big estate. . . . **Ray** and **Pat Walcott** are typical New Yorkers with a picture of a night lighted sky line of buildings in back of the Central Park skating pond. . . . **Charlotte** and **Carl Wood** had an unusually delicately tinted and colored Madonna portrait from Italy. . . . **May Shiels** and all **Henry's** children remembered us. . . . **Alice Chellman** is still at 131 Wayne Drive, Wilmington, S.C.; **Barbara Thomas** and daughter **Virginia Johnston** never forget us either. . . . **Cynthia Blodgett** (**Charlie's** widow) had a long trip to the West Coast to see her sons **Leo** and **Bobby** and her great-grandchildren. Many thanks, many blessings to you all for your kind remembrances.

A picture in the "Pasadena Star News" of November 11 shows our own **Bob Welles** leaning on a long-handled shovel to turn the first spade in the construction of the new 126-bed, \$885,000 Pasadena Home for the Aged. Bob is president of the board. A noble job, Bob. . . . With a generous check to **Ben Neal**, **Thayer MacBride** wrote that he had been planning to do it for several years. So, maybe, it's not too late for some of the rest of 1915 to do the same. With his generous contribution of a stock certificate to **Ben**, **Allen Abrams** wrote: "While I do not see many members of our class, nevertheless I do read with interest the account of their doings as shown in the class notes. I am continuing to work with **Arthur D. Little Company** and, on my occasional visits to Boston, hope to join up for some class function. We expect a busy time around here during the holidays as our two daughters with their husbands and five grandchildren will be with us for nearly two weeks! My best, through you, to classmates, and an invitation to come up to see me any time you're in the vicinity." It's worth a contribution just to get one of Ben's tender, warm and touching thank you letters. How about it?

In the passing of Dr. Robert S. Williams, '02, who died in Cambridge in December, our class has lost a dear old friend, remembered and respected by us all for his friendly nature and patient understanding and sympathy with our youthful problems in chemistry. Our teacher during our first two years, he was never aloof nor above us but always close to us with his personable na-

ture. . . . After a long and losing illness, for which there was no cure our good classmate **Alfred E. B. Hall** died December 20, 1961, at Old Orchard Beach, Maine. For many years he was a mechanical engineer at Saco-Lowell Shops, Biddeford, Maine. He had to retire in 1945, but in spite of his long siege of poor health steadily becoming worse, he kept a marvelously brave and cheerful spirit and maintained an active and generous interest in all class and alumni activities. He was a member of the American Society of Mechanical Engineers and the Maine Association of Professional Engineers. He leaves his wife and a married daughter. We'll miss **Alfred** and the class sympathy goes out to and has been expressed to his family.—**Azel W. Mack**, Secretary, 100 Memorial Drive, Cambridge 42, Mass.

## '16

Remember, says **Ralph Fletcher**, our still-skiing president, the 46th Reunion is only three months away—only three months! Further, says he, put it down on your calendar—the 8th, 9th, and 10th of June at Chatham, well out on the south tip of Cape Cod. Reports, rumors, and predictions indicate a substantial flocking back of 45th Reunioners to the 46th, so that this may well be our biggest interim reunion. . . . Christmas cards brought messages from a number of the shall-we-say boys. **Ed Weissbach**, now the Reverend Weissbach of Christ Church, Fells-way West, Somerville, sends greetings from himself and the new (1961) Mrs. Weissbach. Ed says there's not much news; his daughter's third son was born on November 13 so he now has three grandsons but no granddaughters. . . . **Bill** and **Helen Leach**, with a salutation of "Hello y'all," sent a Holiday-Gram from Austin, Texas. We were sorry to hear later in December from other sources that **Helen** had a fall and broke her wrist in early November as they were about to leave their summer home in upper New York state for Austin, where they live in the winter. . . . And **Joe Farhi** sent his greetings from Brooklyn; we surely hope to see him soon at a New York luncheon or better at the next reunion. The **Peb Stoneses'** card, besides having a cheery message for the Christmas season, was a bit reminiscent of reunion time, for it pictured a hastening golfing gentleman toting a Christmas tree somewhere on his bewheeled no-talk caddy. . . . Welcome too were beautiful cards from the **Steve Brophys** in Pawling (and Berlin), from **Aime Cousineau** in Montreal, from the **Bob Burnaps** in South Orange, N.J., the **Bob Wilsons** in Washington, and, just to indicate what a rewarding job this secretary's job really is, here is a list of some further receipts: from the **Barkers**, the **Berkes**, the **Duffs**, the **Evanses**, the **Handses**, **Al Lovenberg**, the **Irv McDaniels** from Spain, the **Mellens**, the **Mendelsons**, the **Pages**, the **Pyles**, **Steve Whitney**, and the **Youngs**. We mustn't forget a special card from **Bill** and **Millie Cann**, (Har-

vard '37), for **Millie** was the one who joined us at dinner at our 41st in Chatham when excluded from the doings of Harvard's 1937 20th Reunion stag party. They are to be East from California in June at Bill's 25th, and we are not saying we are not hoping that Harvard '37's 25th dinner will also be in Chatham and stag.

**Joel** and **Virginia Connolly's** message from Iowa came in the now familiar form of a photograph in Taiwan (Formosa) in which Joel is pictured waiting to photograph the Ba Gwo, a good luck symbol, on the back of a sedan chair. . . . **Ed Hanford's** card was of special interest—one that he made himself by a silk screen process. He notes: "I generally work up a design in colors but am rushed this year as we are leaving on the 20th to visit one of our daughters in California. I drew up the design Saturday afternoon, cut the stencils and printed the cards (150) Sunday afternoon. It generally takes the better part of a week, as several colors have to be kept carefully in register. The motif is supposed to be Pennsylvania Dutch. I am placing you on my Christmas card mailing list. I guess you know what that means. Yes, I passed the course at Fort Belvoir. Ed." (He refers to the Army Engineers Fallout Shelter Survey course.) . . . We mentioned **Irv McDaniel's** Irv-made hand-painted card in the February issue.

On November 14, **Bob Wilson**, as one of the five commissioners of the A.E.C., presented a paper in Chicago before the Illinois Manufacturers Association and the Illinois Manufacturers Cost Association on the subject "Some Current Problems of the A.E.C." It is good reading, loaded with items everyone should know about. One item: he says all nuclear applications have suffered from public ignorance, "scare headlines about fallout, partly inspired by communist propaganda" have caused unreasoning fear, and this is the main reason why Project Plowshare, the peaceful use of nuclear explosives has made such slow progress (e.g., would provide "a very cheap method for large-scale excavations such as a sea-level Panama Canal"). In December **Bob** returned from a 13-day trip to Japan, his second one out there in 1961. On December 5, he presented a paper "U.S.A.E.C. Policies Relative to Foreign Reactors" at the Second Joint Conference on Nuclear Power, U.S.-Japan Atomic Industrial Forums, Tokyo. In it, he stated the Commission's general policy with regard to the supply of enriched uranium fuel for foreign reactors. Just before Christmas, **Bob** and **Pearl** went to Wooster, Ohio, to spend the long weekend at the Wooster Inn, which, we understand, **Bob** gave to the College of Wooster in 1959. There they had a family reunion in celebration not only of Christmas but also of their 45th wedding anniversary, which they celebrated on Friday evening, December 22. Way back, **Bill Leach** was at their wedding party as an usher, and the **Leaches** have helped the **Wilsons** celebrate the 10th, the 25th, and the 40th. Our heartiest congratulations to the **Wilsons** on their 45th!! Many of us can talk or can soon talk



about our 40th, but not so many about 43rd's or 45th's. As of this writing your secretary expects to be in Washington on "quality" matters and to have dinner with the Wilsons on January 15.

**Aimé Cousineau** of Montreal has been traveling again, this time from September 20 to November 15, with an itinerary that included Shannon, Dublin, Glasgow, Edinburgh, London, Paris, then to Vienna, Milan, Zurich and back to Paris; also the southwest regions of France. Since his retirement as head of the Planning Commission of the City of Montreal several years ago, he has had three trips to Europe, apparently only on odd years (1955, 1959, 1961, and plans for 1963). Probably that's only chance, but we may ask him why. Other trips have included visits to Brussels, Transjordan, Rome, Genoa, Nice, Madrid, and Lisbon. Pretty active and energetic, we'd say, for one in his 77th year! He mentions only 1963 ahead, but who wants to bet he hasn't some fairly settled plans for 1965, 1967 and 1969? Nice going Aimé! . . . **Jim Evans**, who saw the Steve Brophys off at Idlewild, reports word from Steve in West Berlin late in December, where they spent Christmas with their daughter and family. Son-in-law, Major Tyree, commands the tank troops there. Says Steve: "We arrived in London in a fog on time. Since arriving in Berlin we have not seen the sun. Cold? Oh boy! But very interesting; we had a great Christmas."

We noted in the February column that **Raymond Blakney** was back in the U.S. following several years as president of Orlinda Childs Pierce College in Athens, Greece. Actually he has had a stretch of ten years as a college president, including the years he served in that capacity at Olivet College in Michigan. We have a very nice letter from him with a word or two about things we have wanted to know before. Now, he says, he is "on the vestibule of retirement," as minister of the Prospect Congregational Church in Seattle, Wash. His residence, 2026 E. Calhoun, Seattle 2. He says he has done very little directly with the training he had at M.I.T. "unless you consider seven years of teaching mathematics and physics at the Fukien Christian University in Foochow, China, years ago. Still, near the end of my career, I am grateful for the discipline I had from our alma mater." And then he makes a most interesting observation: "I consider engineering an excellent preparation for Christian vocation." Further: "My wife, Laura, still lives with me after 42 years; our oldest son Robert is professor of mathematical physics at the University of Rochester (three children); our daughter Jean had an M.S. in Nursing, married a heart surgeon of note, and is mother of three; our younger son Charles has been a missionary in Southern Rhodesia this past five years (four children) and is now in this country on furlough, working out a grammar and dictionary of the Chindau (Bantu) language. That we live now in Seattle is a surprise to us. It is a good city with a mild climate and not as moist as you may have heard. We are a little lonely, however, for family, friends and associations back East and

with that my best Christmas greetings to you and other 1916ers."

The **Hal Neilsons** also sent their best greetings "to any one of the '16ers you run into". Hal notes that they "have rested up, but we still think of and remember the reunion last June with fond memories and hope that health and circumstances will enable us to attend the future ones for a long time." . . . The **Francis Sternses** left Hartford late in December for Los Angeles "to spend the holidays with the children and grandchildren." From there they were to go to Palm Springs, Calif., where they will stay until the end of March. Francis adds: "Coming West? Telephone in my name, new number which I've forgotten." The address for sojourners is 225 West Vista Chino, Palm Springs. . . . If you want something new, and very good reading, too, you may be interested in the *Manufacturers Mutual Almanac* for 1962, the first one ever, No. 1. This is **Hovey Freeman's** company and feel sure you can get a copy by writing Hovey, Box 1485, Providence 1. The weather forecast for June 8-11 is: "Violent thunder storms in the Mississippi valley and eastward, pleasant in the southwest. Cooler in the northwest and central plains." So everything looks O.K. for Chatham on Cape Cod.

**Van Bush** was in the news for two quite different things in November. First, The Tech of November 1 announced: "Bush Patents 'Floating' Piston; Offers Simplicity and Efficiency. A free-piston engine has been patented this week by Dr. Vannevar Bush, Honorary Chairman of the M.I.T. Corporation. As the name indicates, the pistons in the engine are not attached to anything, but are free to move back and forth in the cylinder. This type of engine is especially useful where a high-grade fuel is in use." The Bush engine is being developed by the Stewart-Warner Corporation of Springfield, Ill. "Other free-piston engines are in use in European power stations and ships. Dr. Bush expects that his engine will first be adopted for stationary use in this country, then for use in motor vehicles." The second item was reported in the November 12 issue of the *Boston Sunday Globe* and carried the heading: "Learn the Rules Before Playing in New Ball Park; Scientists Have Been Drawn Into Politics And Must Take an Ever-Growing Part in It; But Many Act Like Fish Out of Water, Says Dean of American Scholars." It is an article by Van Bush which deserves reading. Here are excerpts: "The democratic system creaks at the joints, it wastes time and money, it bases its decisions more on subtle influences than on rational logic, and it often irritates those who are accustomed to more orderly and systematized functioning. But it just happens that the democratic system, with all its faults, is the best system ever devised by the mind of man. An essential feature of this system is the means by which men acquire and maintain political position and authority. These means involve a thorough understanding of human nature and of mass reactions. Many men in political life are masters of this art. And in the large ma-

jority they are also devoted to the welfare of their country. . . . If scientists are to have their full influence for the good of the country in the days to come, many of them will indeed need to learn to practice this difficult art."

The October 9 issue of the *Bridgeport, Conn., Post* carried an article that started: "Speaker Cites Cancer Threat. Unless the public is informed now on the causes of cancer, within decades nearly every civilized being will be afflicted with the disease." This is what **Dick Berger**, President of Cancer Prevention, Inc., told the Mr. and Mrs. Club of Congregation Sharre Torah as he called for widespread publicity. The article goes on: "Among the 'insufficiently publicized' causes of cancer are: excessive smoking; inhalation of gas and oil fumes; cooked foods heated to browning, especially when fried; synthetic food additives; tight underclothing worn by women, particularly brassieres; and use of certain chemical birth control devices. Mr. Berger told the audience that X-raying of pregnant women is directly associated with incurable leukemia in children. His materials on the causes of cancer are compiled from results of laboratory tests undertaken by various foundations active in the prevention of the disease. The American Cancer Society has spoken out against smoking as being a causative factor in cancer but has taken no position regarding the other alleged causes mentioned by Mr. Berger in his address, a spokesman said. Mr. Berger says he formed his non-profit, tax-exempt organization in 1947 primarily to lay before the public the facts relating to cancer. He said his interest in cancer has spanned 30 years and at one time included laboratory experiments in his home."

We are glad to report that **Steve Berke** has been coming along well enough to write us a letter just before Christmas. He had another heart attack that put him "out of the picture since the first of November, three weeks of which was at the New England Baptist Hospital." Steve asked for **Stew Rowlett's** new address in Florida. Here it is for all: 1117 South Duncan Avenue, Clearwater, Fla. A note on New Year's indicated they were not wholly unpacked then, so Stew has been busy, but he adds: "I guess I'll enjoy this Senior Citizen stuff for a while." We'll wager the Rowletts will make it much more interesting for those who have the good fortune to know them way down there! . . . Others who have just moved to Florida and who also help to raise the average quality of the state's inhabitants, are the **Emory Kemps**. On November 30 they sold their property in Wellfleet, on December 5 they arrived in Florida, on December 6 they signed a contract for building their new home in Sarasota Springs, and on December 11 they were back in Wellfleet. Fast moving, no? By January 15 they will be on Siesta Key, Sarasota, where they will stay until the house is completed on about March 15. The Kemps have been looking forward to this for a long time. The picture card showing a model of their new home makes one say: 'Hm! Pretty nice!,' and we surely wish them only the



best in what they call "the land of summer and sunshine."

The **Phil Bakers** were in New York a few days in December but at the wrong time to attend a class luncheon. Phil notes: "I did have lunch with Gene Tunney and the Metro star of old, Martinnelli. What a city is New York, thrilling, tremendous."

We are proud to point out, in the November 1961 Second Century Fund Newsletter, pictures that include two fine individuals from 1916—Steve Brophy on page 3 and Van Bush on page 5. . . . Again, we close the column for the time being. Here, in the beautiful hills of northern New Jersey, as we take our nearly daily constitutional walk to the post office, we quite generally have the good company of **Harold Mills**, who lives a block away. He modestly disclaims expertness in color photography of birds, but his name nevertheless appears in the local newspaper; he's giving an educational show to some fortunate local youth organization. At the post office, it is not frequent but it does happen that we meet **Elsa Mueser**, as she posts something that can't wait for the postman to come. Also, from or from close to these hills of Jersey, frequently comes the sparkling telephone voice of **Jim Evans**, who has gone back to work again as an enthusiastic teacher in one of the Paterson, N.J., high schools. One has only to see just once, as we have, the looks on young faces (both kinds) as they greet him with a "Hi" or a "Hello, Mr. Evans" in the school corridors. We don't know what he is teaching this term; last year he borrowed our classic "Precision of Measurements" by Goodwin—remember?—for one of his classes. We hear **Peb Stone**'s voice on the telephone every now and then. Today he said that he and **Joe Barker** were the only '16ers at the January monthly class luncheon in New York; in fact, they were noisily outnumbered by the '17ers. Another voice too has been that of **Earl Mellen** who, though retired as president of the Weston Instrument Division of Daystrom, continues so active in civic and other affairs we still rarely see or hear from him. Once again, as we come to a close, may we suggest that you send us all kinds and bits of information for the column. And, as good old Ralph says, mark your calendar for the 46th Reunion, Friday, Saturday, and Sunday, June 8, 9, and 10. When the first of June comes along, you'll be so glad you did.—**Harold F. Dodge**, Secretary, 96 Briarcliff Road, Mountain Lakes, N.J.

# '17

When you cast your eyes over these notes, you will have probably sent in your reservation for the 45th Reunion at Snow Inn on Cape Cod, polished up your golf clubs, put your fishing tackle in shape, and tried to visualize what your classmates will look like after "x" years. At present writing, it looks as if we would have over 100 present, including a goodly number of wives. Better make this re-

union your big chance to renew old acquaintances. . . . At least one classmate can't make the reunion. **Clair E. Turner** of Arlington, Mass., who is a health education consultant, states, "It seems that Mrs. Turner and I, in all probability, cannot come to the 45th Class Reunion. On January 1 we are going to Paris for three months or more, where I am serving as a public health consultant for WHO and UNESCO. Following that period, there will be two or three months of visiting in the Near East and Far East, in all probability." . . . **Frank Peacock** of Wilmette, Ill., is going to sandwich the reunion in between trips around the world. He writes: "I received the brochure on Snow Inn when I left for London two weeks ago (the latter part of November, 1961). I have sent in my reservation for myself and wife. I think this change of locale is excellent. I am still working on the board of engineers for the Volta River Project (hydro) in Ghana for Greeley and Hansen of Chicago. I just don't know what else to do. I spent two-and-one-half months' vacationing in Europe this summer. Next year, I may go to Tokyo on the Volta job."

Returns from reunion cards bring notices of the decease of members of the class, some of whom were with us for the full four years, and others who were at M.I.T. to get additional degrees, or left for other reasons. . . . Mrs. Ames of Washington, D.C., advises us of the death of her husband, **Norman B. Ames**, on March 5, 1959. Professor Ames received degrees of S.B. and S.M. in electrical engineering. He spent the years 1916 and 1917 at Cambridge in the Harvard and M.I.T. co-operative courses in electrical engineering. He obtained his initial B.S. in electrical engineering at Mississippi State College in June, 1915. He was professor of electrical engineering at the George Washington University in Washington, D.C. . . . Mrs. **Earl F. Enright** of Philadelphia, Pa., notifies us of the death of her husband on July 17, 1961. Earl received his S.M. in naval construction and engineering at M.I.T. A greater part of his career was spent in naval repair and construction work. He entered the Navy from M.I.T. and held such posts as superintendent of construction for the Navy at the N.Y. Shipbuilding Corporation; head of the Construction Division of the Bureau of Construction and Repair, Washington, D.C.; production officer in charge of ship repair and construction at Philadelphia Navy Yard; yard manager, Boston Navy Yard; deputy head design and construction, Bureau of Ships, Navy Department, Washington, D.C. He retired from line duty in 1944. His last recorded position was vice-president and director, Management and Development Corporation of Philadelphia.

**Daniel J. Henly**, whose family reported him deceased, was a student for a short time in Course IV, architecture. He resided in Berlin, N.H. . . . Mrs. **Harold S. Martin** reports from San Diego, Calif., the death of her husband on November 26, 1961. Harold received his S.M. in aeronautics at M.I.T. He was a retired aircraft company executive and one of America's pioneer aviators. He retired

from the Air Force as a lieutenant colonel. He was graduated from West Point in 1913. In later years he was associated with Ryan Aeronautical Company, retiring in 1956. He was buried at West Point, N.Y. . . . Notice has been received of the death of **Commodore Penn L. Carroll** on December 10, 1961. Commodore Carroll was graduated from the U.S. Military Academy, Class of 1909. He attended Columbia University in 1916 and received his S.M. in electrical engineering at M.I.T. in 1917. He was 75 years of age at the time of his death. His entire career was spent in the Navy. In recent years he was connected with the Instituto Tech de Monterrey, Mexico. He wrote us last year (November, 1960, class notes), "Nothing pleases my school here more than to be called the M.I.T. of Mexico."

If any of our classmates have a particular interest in hospitals, they might find the annual report of the New England Baptist Hospital informative reading. **Stan Lane**, president of the hospital, would no doubt send you a copy on request. His address is 85 Old Colony Road, Wellesley Hills 82, Mass. . . . **Ray Stevens** and Mrs. Stevens made a hurried visit to London recently; Ray's visit was on behalf of A. D. Little. . . . **Al Moody** reports as follows: "I had to take mandatory retirement from Natural Gas Pipeline Company of America in October of 1959, and we moved from Malvern, Ark., back to Denver, Colo., which is our old home and where we have our roots. However, I have been working a good share of the time since my formal retirement. Last year (1960) I supervised the construction of a natural gas line in western Colorado. In March of this year (1961) I was asked to supervise the construction of some new compressor stations for the Coastal Transmission Corporation, one of the outfits that moves natural gas from Texas to Florida. My wife and I came down to Houston, Texas, the last of March, 1961, expecting to be here about six or seven months, but the whole project got tied up in the Federal Power Commission red tape and actual construction work has not even started. We will, therefore, probably be in Houston until this coming summer, which will be a good time to leave the heat of Texas and get back to cool Colorado. If the job permits, I'll be on hand for our 45th."

**Irving Fineman** is the author of the recently published book "Woman of Valor" which goes behind the scenes to tell the personal story of struggle and triumph of **Henrietta Szold**, the founder of Hadassah and savior of thousands of Jewish children through Youth Aliyah. Irving is the first person outside of the Szold family, according to the Boston Jewish Advocate of October 5, to be permitted access to Henrietta's private journal. The Advocate goes on to say: "In this book, Mr. Fineman seeks to make the revered Zionist leader come alive with all her human quirks as well as her greatness. Each period of her life—the childhood years in Baltimore, the middle years in New York, where she was a student, journalist and editor, and finally her immersion in the Zionist ideal—are covered in this biography. Mr. Fineman has taught

literature at Bennington College, written for motion pictures, had two plays produced, and published short stories, poems, and six novels, including 'Hear, Ye Sons' and 'Doctor Addams.' He lives on a farm in Shaftsbury, Vt." . . . The Times-Dispatch of Richmond, Va., which published an article headed "M.I.T. Alumni Hear Moon-Bounced Voice" on October 20th last, closed the article with the following: "A local M.I.T. alumnus, **Merrill Lee**, noted yesterday that the Institute engineered a 16-city hook-up broadcast to alumni chapters in 1916, when closed circuit broadcasts were brand new. The speakers on this occasion were Orville Wright and Alexander Graham Bell."

The N.S.I.A. Newsletter of December 1961 (National Security Industrial Association), which reported the West Coast Dinner Meeting of the association in November, featured two pictures of the association's first vice-president, **Thomas Meloy**: a single photograph in a "questioning mood" and a group picture, in which the aforesaid Tom together with three other association officials were full of smiles. . . . Every now and then the Research Foundation of the Controller's Institute of New York City sends out publicity indicating that the director, one **Joe Littlefield**, is extremely busy in retirement. . . . The following appeared in a recent newspaper: "Doctor: 'You have acute appendicitis.' Steno: 'Listen, Doc, I came here to be examined, not admired.'"—**W. I. McNeill**, Secretary, 107 Wood Pond Road, West Hartford 7, Conn.; **Stanley C. Dunning**, Assistant Secretary, 1572 Massachusetts Avenue, Cambridge 38, Mass.

## '18

Writing, as is the present case, with snow crowning the little spruces which winter has put to sleep beyond my window pane, gives one a feeling of the beauty and frailty of life. Since it is early January, the vital link which binds old classmates together is enlivened by a few Christmas cards. One from **Johnny Clark** in Starkville, Miss., where he is professor of mechanical engineering in the State University, bears good wishes but no personal message. . . . **Fred Philbrick** has moved to a new home, this time in Coral Gables. Testifying nicely to both a need for beauty and an increased personal frailty, he says, "Between remodeling and moving I did too much and had a reinfection of the same area because of which I had an operation a year ago. I am now on the mend, but it was a little rough for several weeks. Between Castro and desegregation we have local problems which I am sure can be worked out intelligently." He promises a more lengthy communication later. . . . From **Jim Flint's** wife comes testimony that he still loves the beauty of the mountains and streams, a love which became deeply set during his boyhood in Denver. She says, "Jim is going in for fishing in earnest. He went to Canada last spring and to Alaska in the summer. Anything less than a five-

pound trout is too frail for him to pit his wits and energies against. Next summer we hope it will be the Chilean lakes of South America." Oh Jim, well do I remember the happy day we stood in the Colorado River where it rises at Grand Lake! Hundreds of trout jumped around us and even nuzzled our legs, but the finny bums just would not bite. It was a lot of fun just the same.

There is a certain beauty in tradition, even the tradition of family devotion to one college. For example, my daughter has six relatives no further removed than aunts who, like her, graduated from Wellesley. **Georgius Y. Cannon**, who took his degree in architecture and practices in Salt Lake City, can do even better. He has seven relatives who are M.I.T. men, including three older brothers. Two nephews and a cousin are there now. Homer C. Ling, '17, II, was in the class ahead of us and a distinguished member of the wrestling team as well as a great gentleman and a good friend. He served China with distinction until 1950, when the frailty of the political situation and the tarnishing of red as a beautiful color caused him to return to the United States. His Christmas card says he has been busy helping his second son in establishing the Lintronic Laboratories, Ithaca, N.Y. Homer says he may go to England sometime this year to visit his other two sons.

All of us are increasingly aware of the increased frailty which comes with our advancing toward the far horizon. I was surprised and exasperated a bit ago to discover that the simple maneuver of standing on my head can no longer be performed. What we all hope is that the final collapse of that frailty can be accomplished with grace as we pay the debt we owe Mother Nature of giving back our chemicals to the soil. Professor **Crescencio F. Gomez, II**, director of the Biblioteca Nacional de Honduras, paid his debt on September 7. Dr. **Eugene R. Manning, X**, who worked for the Sun Oil Company in Philadelphia, paid his debt on September 17. **Edward N. Winslow, IV**, who retired some time ago to West Dennis, Mass., paid his debt on November 13. **Royal Barry Wills** paid his on January 10, following not only a long and distinguished professional career, but continuous service in the interests of our class. He was additionally a lovable man, full of laughter, earthy wisdom, and the sanctifying grace of sincerity. Bill designed more than 2,500 homes, but was internationally known for his traditional Cape Cod exteriors. A big, central chimney was the trademark which gave his work both identity and the vibrant sense of being "homey." He also enjoyed restoring tired, tumbled-down houses into picturesque and colorful structures which gave a sense of belonging to and complementing the particular land on which they stood. Bill was born in Melrose. He was one of the group of us who almost became officers in the Construction Corps of the U. S. Navy. Thank God the war ended sooner than we were needed. For a while he was employed by the Cramp shipyard in Philadelphia, and then by the Turner Construction Com-

pany of Boston. In 1925 he picked up his triangles and tee-square to open an office of his own on Joy Street near the State House on Beacon Hill. Years later he moved to Charles Street. Instead of paying for advertisements in various periodicals, canny Yankee that he was, Bill spent that part of his business budget on entering architectural contests. In 1929 he won the regional prize of the National Better Homes competition and three years later, with a strong dash of the "gee-whiz," found himself receiving a gold medal from the hand of President Hoover for the best small house design. This had an immediately ascertainable effect on the demand for his work. And, being no 90-day wonder, many other awards followed as the years went by, including a prize house to which Life magazine gave national publicity, the Certificate of Honor from the Massachusetts State Association of Architects, and election as a fellow of the American Institute of Architects. There were numerous articles by and about him in various widely-read publications. There are eight books bearing his name, some of which were ghost-written. (Leon Keach, '17, did at least one.) During World War II, when no private homes could be built, Bill devoted time to preparing a book called "Houses For Homemakers." In the building boom which followed the war over half a million copies were sold.

A few years ago he bought an estate in Winchester, divided it into attractive house lots, and built a lovely community, keeping one house for himself. It has modern conveniences but old interior panelling, doors that were carpentered in colonial days and clapboards to which time had given, as he said, "A patina which is a blend of age and honest craftsmanship." Many newspapers have and architectural magazines will carry the news of his death. The Boston Herald honored him with an editorial. Our class would do well to consider honoring him with some more durable memorial. And yet his own creations are an amazingly durable memorial, considering life's continual and quite inflexible rhythm of destruction following creation. Good houses and worthwhile books have a satisfying way of lasting, sometimes for centuries. Bill is survived by two sons and six grandchildren in addition to his widow. She has been as gentle and lovely a wife as is to be found in the entire class. Because he was failing for so many months, his going could not have been a surprise to her, despite which one of the very hardest things we ever have to learn is to accept the final "Good bye" to someone we love. May she be sustained and soothed by the knowledge that he was spared the parting.—**F. Alexander Magoun**, Secretary, Jaffrey Center, N.H.

## '19

A most interesting report has been sent to me concerning the work of **Harry A. Kuljian**, of Philadelphia. He is president of Kuljian Corporation, an international engineering firm. He began work in In-



dia in 1949, and was quick to see the advantages of training Indian workers for technical positions. He has brought promising engineers to this country for study and work in his own and other engineering organizations. With a nucleus of engineers to whom he had given training, Kuljian in 1956 formed the Indian firm, Kuljian Corporation (India). The Indian engineers own 51 per cent of the stock and in 25 years will own all of it. Kuljian says: "There are those who believe that technical knowledge should not be shared and that our services will no longer be needed once India has sufficient engineers to meet the need for technical services. Such persons do not believe that progress brings many new opportunities for the creative imagination upon which all progress is based."

**Leo E. Beaulieu**, of Holyoke, Mass., died on November 28 of a heart attack. He operated an electrical business for some years, and from 1953 to his death was engaged in the real estate business. He is survived by his wife, a son and daughter. . . . Word has also been received of the deaths of **Herbert F. Young**, P. O. Box 324, S. Laguna, Calif., on January 2, 1957, and of **Lewis E. Hartman**, Lancaster, Pa., on December 26, 1960.

**Duffy Slotnik** was recently elected president of the Beth Israel Hospital in Brookline, Mass., one of the large voluntary hospitals in that area, closely associated with Harvard Medical School. . . . Please note the following new addresses: **Alexis R. Wiren**, 55 West Islip Road, West Islip, N. Y.; **Harold W. McIntosh**, 1534 Waverly Road, Kingsport, Tenn.—**Eugene R. Smoley**, Secretary, 30 School Lane, Scarsdale, N. Y.

## '20

Welcome word during the holiday season was heard from our perennially faithful classmate, **K. B. White**, who still maintains addresses in both Paris and Union City, N.J., from Bob Sumwalt, Chuck Reed, Bud Cofren, Bunt Murphy and Homer Howes. Homer said he got in touch with K.B. while in Paris last summer, but K.B. was at his chateau some 40 miles out of the city at the time, so they had to settle for a visit by phone. K.B.'s Paris address is 24, Rue des Carnes. . . . **Bud Cofren** continues to winter at Winter Haven, Fla. . . . **Bunt Murphy** remarks on the singular fact that our class notes seem to be much nearer the front of the class section in The Review than they used to be. Bunt's older son has transferred from California to upper New York state so is nearer home; that is, New York City. His younger son is in Marietta College and contemplating a career in medicine. Bunt says "being director of a Home for the Aged is as demanding but not as exciting as operating schools for delinquent boys." . . . **Bob Bradley** spends a good part of his time at his lovely estate in South Dartmouth, Mass. . . . **Ken Clark** has left the big city and is in Sherman, Conn. . . . **Horace Frith** has moved

from Rocky Mount to Crewe, Va. . . . **Herman Marrow** has moved from Cambridge to Brookline. . . . **Dr. Yu L. Yeh** is with I. P. Tak Company, Ltd., Edinburgh House, Hong Kong.

**Bat Thresher** recently addressed the 76th annual meeting of the New England Association of Colleges and Secondary Schools in Boston. Bat is referred to as one of the "elder statesmen" of college admissions. . . . **Harold Smiddy** writes from his home at 30 Sutton Place, New York City, that he and Lois took a Caribbean cruise after his recent retirement from General Electric. He has also been putting in some good licks for the Second Century Fund in the New York City area. Harold has been made a director of Electric Bond and Share Company and a trustee of Ithaca College. This is the college that awarded him a doctor of laws degree last June. He is also immersed in plans for an important worldwide management congress slated for New York next year. Guess you can't slow a good man down. Harold says he had a pleasant visit with **Skeets Brown**, who is now holding down the vice-presidential chair in New York City for American Smelting and Refining Company. . . . Bostonians who have been visually inspected as late as January and who show no signs of senility whatsoever are **Jim Gibson** and **Bob Patterson**. After seeing them one could wish one had elected a similar career in the insurance business instead of the advertising racket. —**Harold Bugbee**, Secretary, 7 Dartmouth Street, Winchester, Mass.

## '21

A special notice from the Alumni Association calls attention to the current series of half-hour television programs, entitled "Meet the Professor," appearing on the ABC network nationally at 2:30 P.M., Sunday, Eastern Standard Time. The initial program last January featured Technology's **Huston C. Smith**, Professor of Philosophy in the Department of Humanities and was filmed on the Institute campus.

For the statistically minded who paused over the statement in last month's notes that **Mike Sutherland**, '65, grandson of **Ed Dennison**, is the 70th member of 1921 families to enter Technology, here are data collected over the years. Both members of the Class of 1942, the sons of **Mark Ireland** and **Andy McKee** were the first 1921 offspring to enter M.I.T. Except for 1945, 1961, 1962 and 1964, each class from 1942 through 1965 included at least one son, daughter, nephew or grandson of a member of our class. Among this group are 10 sets of brothers, four nephews, one daughter and two with mothers in 1921. While we are on the subject of statistics, the question is often raised as to the original and current size of the Class of 1921. So far as we recall, the entering group in September, 1917, was approximately 650, and there were some "junior freshmen," possibly numbering 150, who entered the following January. The total class roll

now carried by the Alumni Association shows 716 living and 244 deceased, for a grand total of 960, which includes those who transferred to Technology following our freshman year. The latest figure for the active class roll is 536, representing those who maintain good addresses in the Cambridge files. By rule of the Alumni Association, the Alumni Register listing comprises those who hold M.I.T. degrees and those who completed at least one full term of residence and are qualified in the opinion of the Association. This latter requirement has trimmed some names from Alumni Registers which appeared prior to the 1961 volume and the total 1921 list was, we believe, well over the 1,000 figure at one time.

**Dick Windisch** receives thanks for the excellent series of Minox camera prints of scenes from our 40th Reunion which he sent to **Ray St. Laurent**. If you have prints, slides or movies of this or previous occasions, why not send them to your secretaries for incorporation in **Bob Miller's** photo history of the class. . . . A recent phone call from Ray revealed he has been in Washington and talked with **Larry Conant** of the Federal Aviation Administration. Ray also said he had received a letter from **Ralph** and **Vina Cooper**, telling of a cruise trip, and mailed from Venice, Italy. . . . Class Agent **Larc Randall** reported planning a holiday trip to Louisiana to visit a son and his family, with the prospect of a stop over to see Co-Class Agent **Ed Farrand** in Leesburg, Ga., en route. Larc is now chairman of Larcom Randall Advertising, Inc., 308 Boylston Street, Boston, and makes his home at 22 Kenilworth Road, Wellesley 81, Mass. . . . **Joe Gillson**, now a lecturer in the M.I.T. Department of Geology and Geophysics, following his retirement as chief geologist for Du Pont, reports his new home address as 31 Bay State Road, Boston 15.

From Mexico City comes the announcement by **Vivi** and **María Helena Valdés** of the marriage of their daughter, **María del Carmen**, to **José Manuel Valverde** at a nuptial mass last December 11 in the Church of San Diego del Antiguo Convento de Churubusco. It was a delight to have the Valdés trio at our 40th Reunion in Plymouth last June, and we speak for all in sending the young couple good wishes. . . . **Romney J. Mellen**, Chief Metallurgist of the American Smelting and Refining Company, gives his home mail address as P.O. Box 895, El Paso, Texas. . . . **Harry I. Granger**, who lives at 98 Randolph Street, South Weymouth, Mass., continues as the treasurer of the town of Weymouth. Harry is also active as the treasurer of the local Kiwanis Club. He is married and has no children.

Once again, Maxine and your secretary take this opportunity to thank members of 1921 and other classes who gave us so much pleasure with holiday greetings and personal notes. Despite the howls of those who cry "commercialism," these annual messengers convey a grand physical and spiritual "lift" which more than compensates for secretarial burdens and which turns dreary winter days into the light-hearted spring of re-



union time. Welcome greetings came from Jack and Elizabeth Barriger, Ednah Blanchard, Ethel Burckett, Rich and Mary Louise Clark, Phil and Edna Coffin, Chick and Maida Dubé, Janet and Gef Farmer, '22, Ed and Helen Farrand, Harry and Catharine Field, Betty and Morrie Goodhart, '35, Munnie and Alex Hawes, Sumner and Betty Hayward, Marjorie and Jack Kriz, '41, Dug and Betty Jackson, Jack and Marge Kendall, Chick and Laurie Kurth, Moose LeFevre, Milicent and Joe Maxfield, '10, Bob and Helen Miller, Regina Munning, Phil Nelles, George and Muriel Owens, Helier and Graciela Rodríguez, Ray and Helen St. Laurent, Rufe and Madeline Shaw, Helen and Lem Tremaine, '23, Louise and Carlton Tucker, '18, Dave and India Woodbury.

Ethel Burckett reports a grandson, now a year old, and another grandchild on the way. . . . Squire Ed Farrand says that he and Helen had such a good time at the reunion that they plan to be back next June; we hope they will have time to visit us in Glen Ridge. He is now building a bridge with a 20-foot span for use by a trailer truck with a 20-ton load. Then this Course VI man says, "I'm not loafing, mainly because I'm not too good at knowing how to live a life of leisure." . . . For Rich Clark, the year 1961 marked his retirement, his attendance with Mary Louise at Coast Guard Auxiliary conferences in Texas and Alabama, their 40th Reunion motor trip and three additional weeks on Cape Cod. They had hardly gotten back to see their two grandsons when Hurricane Carla did widespread damage. Fortunately, their house and boat came through the 18-foot-above-normal water level without damage. With golf, boating, fishing, photography, travel, service club activity and work around the house, they report: "We are thoroughly enjoying retirement; in fact, Rich wonders how he ever found time to go to work." Another letter from Rich promises us they will visit in Glen Ridge when they spend a month on Cape Cod next summer.

The illustrated annual report in living color from Dug and Betty Jackson welcomes their 12th and 13th grandchildren, Gordon Stuart Jackson and Mary Catherine Seabury. Our longhand secretarial records are unable to cope with modern production rates and we'll either have to employ high speed computer facilities or just plain admit publicly that we don't know whether Dug and Betty's 13 now equal Phil and Edna Coffin's "13" (as of last June) or possibly are exceeded by the current status of Wint and Muriel Dean's "13" (recorded in 1956). Do we hear 14 . . . 15 . . . 20 . . . going . . . going . . . ! Well, who claims to be the winner? . . . Ray and Helen St. Laurent chose their handsome card because they found a doe and faun feeding in their orchard at Vinalhaven, Maine, during September. . . . Jack and Marge Kendall say the highlight of 1961 was their trip to our reunion. They flew to Detroit, picked up a new Impala, spent three days driving to Plymouth and, after Alumni Day, went sightseeing to Nova Scotia, Gaspé, Quebec, Montreal, Ottawa

and then back to the West Coast, where their five grandchildren live. Jack planned a Florida trip with Marge for last January, with business stops enroute, and says they will visit the Seattle fair and the Canadian Rockies next June. We still can't seem to get them to add New Jersey to their otherwise excellent itineraries.

Rufe and Madeline Shaw sent an attractive picture of most attractive Shawnee Hall, their home on the Delaware, and report having heard from Helier and Graciela Rodríguez . . . Sumner and Betty Hayward say they saw Watts and Winifrede Humphrey in Princeton, N. J., where they were visiting their daughter, Priscilla. . . . Bob and Helen Miller maintained their unbroken record of beautiful annual photographs of their entire family, which becomes even more photogenic as time goes on, particularly with the addition of the two cute grandchildren, Margaret Ann and Joan Marie Weaver. . . . From Spain came a cherubic singing mailboy, complete with "Correio Celestial" cap and dove of peace with holly branch, chanting an opened aerogramme message reading: "Nacido Jesús. . . . Stop. . . . Aleluya. . . . Stop. . . . José y María." We share the message with all of the class: "This time our greetings come from farther away. Perhaps, for that reason they have a larger driving force behind them. Our good wishes for your happiness are as sincere, strong and heartfelt as ever. May this Christmas bring to you, Cac and Mac, and to Al and Ellie, great happiness that will last throughout the New Year. Affectionately, Graciela and Helier Rodríguez."

With profound sorrow we record the passing of two of our members and extend to their families the heartfelt condolence of the entire class. Hazen Curtis Pratt died in 1959 and no other information is available at this time. A seaman second class, U.S.N.R.F., in World War I, he became an ensign in 1918, was transferred to the Marine Flying Corps as a second lieutenant and successively attended the Naval Air Detachment at M.I.T., the Norfolk Flying School and the Pensacola Naval Air Station. Disabled in an aviation accident, he was unable to go overseas and was assigned to the M.I.T. detachment until war's end. After graduation in Course II, he joined the Ritter Dental Manufacturing Company, Rochester, N.Y., and later became chief engineer of the Rochester Bureau of Municipal Research, then research engineer for Minneapolis Moline Power Implement Company in Minneapolis, and design engineer for Hoffman Engineering Corporation, Anoka, Minn., where he made his home. In 1937, he wrote to your secretary, enclosing a clipping announcing he had won a nine-year patent action against the U.S. Government, charging infringement of his own invention when an arresting gear was installed on aircraft carriers. The drama and hazard that went hand in hand with his invention began when he was injured in a crash. He had been working on the practical construction of the device as early as 1920, and the story of its test demonstration to gov-

ernment agencies is one of several failures and heartaches, none connected with the invention itself, until successful operation was shown sometime during 1921.

Tristram Joseph Campbell died in an elevator accident in Salem, Mass., on December 7, 1961. The head of his own industrial engineering firm, Tristram J. Campbell Associates, with offices in Boston, he had completed a late night study at a Salem plant and had attempted to board the elevator to leave. He was graduated from Technology in Course II and was with the General Electric Company before joining Day and Zimmerman in Philadelphia as an industrial engineer. He had been New England manager of Kenneth A. McIntyre Associates before organizing his own company. He had a distinguished record in World War II as managing director of the Johns Hopkins Research Laboratory in Silver Springs, Md., and was cited by the government for his part in the proximity fuse, which was developed at the laboratory. He leaves his wife, Dorothy; a daughter, Dorothy; and a son, Tristram.

Reminders: Your contributions to the Amity Fund and the S.C.F. before June will still be counted towards our biggest of all Class Gifts, so give it another boost now. Address Amity Fund in care of Chick Kane, '24, and S.C.F. in care of Jack Wilson, '29, both at M.I.T., Cambridge. The Class of 1921 will gather again at Alumni Day on campus in Cambridge on Monday, June 11, 1962. Meanwhile, send news to your secretaries.—Carole A. Clarke, Secretary, International Electric Corporation, Route 17 and Garden State Parkway, Paramus, N. J.; Edwin T. Steffian, Assistant Secretary, Larsen, Steffian, Bradley and Hibbard, 711 Boylston Street, Boston 16, Mass.

## '22

Have you filled your car with gas, or made your airlines reservations for the 40th Reunion, and sent in your check for one of the ocean-front rooms overlooking the delightful harbor at Swampscott? Do it now and feel happy about meeting all of us on June 7-10 for one of the best parties the Class of 1922 has ever had. Unusual plans are being made in a big way for this proper culmination of the last five years' activities. Your secretary is leaving on the Mauretania for the Mediterranean just to rest up for this event. Please send your notes and personal suggestions of activities to C. George Dandrow, Assistant Secretary, Johns-Manville Corporation, 22 East 40th Street, New York 16, N.Y., in February and March for incorporation in The Review notes. . . . In the meantime, the Buffalo Alumni Club is entertaining the M.I.T. Concert Band on February 3. We are very happy to have them with us and will be most honored to introduce them to Western New York. . . . Albert S. Rairden has been appointed manager of the Newton Hydraulic Tooling Company. . . . Crawford H. Greenewalt is the 1962 recipient of the John Fritz Medal, the highest honor of

the engineering profession. Established in 1902, as a memorial to the great engineer and steelmaker whose name it bears, the medal has been presented to some of the world's most distinguished engineers and scientists, including Westinghouse, Alexander Graham Bell, Edison, General Goethals, Orville Wright, Marconi, Sperry, Hoover, Pupin and Kettering. Mr. Greenwalt was cited "For outstanding contributions . . . through leadership in research, in the translation of research achievements by way of sound engineering into useful products," and through his "able championship of the American free enterprise system both in the spoken and written word." Presented not more than once in any year for "scientific or industrial achievement" in any field of pure or applied science, the John Fritz Medal is sponsored jointly by the American Society of Civil Engineers, the American Institute of Mining, Metallurgical and Petroleum Engineers, the American Society of Mechanical Engineers, the American Institute of Electrical Engineers, and the American Institute of Chemical Engineers. The United Engineering Trustees, Inc., is custodian of the award.

**Frank T. Westcott** captained the U. S. Bridge team in an international match in Argentina (no report of results). . . . **Nathan Cherniak** received the Howard S. Cullman distinguished service medal of the New York Port Authority. . . . **Oscar Horovitz** was awarded a Fine Works Prize for his film "Rangoon Prays and Plays." . . . **John H. Teeter**, who oversees the activities of the Damon Runyon Memorial Fund for Cancer Research, announces that the Fund has invested more than \$15 million in fighting cancer and that when the cure is found the Fund will go out of business. The Fund has established a policy of trying to expedite scientific experiments against cancer in laboratories in every state in the country. Here is a fellow who is working himself out of a job in what we hope is a most successful manner. . . . A clever Christmas card from **Frank Kurtz**, 734 N. W. 9th Street, Delray Beach, Fla., looks attractive enough to be worth a visit. Frank assures all members of a most sincere welcome. . . . New addresses include **Charles D. Mackintosh**, St. Petersburg, Fla.; **Edward A. Merrill**, Houston, Texas; and **Elmer E. Sanborn**, Atlanta, Ga. Don't forget that we will see you at the New Ocean House in Swampscott on June 7.—**Whitworth Ferguson**, Secretary, 333 Ellicott Street, Buffalo 3, N.Y.; **C. George Dandrow**, Assistant Secretary, Johns-Manville Corporation, 22 East 40th Street, New York 16, N.Y.

# '23

**Miles Pennybacker** has been elected a director of Tubotron, Inc., of Newark. Pennybacker is president of Voltarc Tubes, Inc., of Norwalk, Conn. Tubotron produces electronically welded copper tubing.

Last month we reported the death of

**Franklin K. Haven**, and his many friends might like more details about Frank. He was the New England district representative for the Jervis B. Webb Company, a Detroit conveyor manufacturer. He was a registered professional engineer in Massachusetts, a member of the American Materials Handling Society and the Massachusetts Society of Professional Engineers, and a former member of the Winchester Masonic Lodge. He also held membership in the Veteran Motor Car Club of America. His chief hobby, an unusual one, was clockmaking. He had made more than 25 clocks, ranging from small banjo types to mantle and grandfather clocks. . . . It is with deep regret that we report the deaths of the following; our sympathies go out to their relatives and friends. **Matthew H. Connors** died on October 20, 1961. Matthew lived in Wethersfield, Conn., and was claims manager of the Glens Falls Insurance Group in Hartford. Rose, wife of **Dave Kaufman** of Tiverton, R.I., died on December 4, 1961, after a four month's illness. Rose will be missed by those of us who have attended our class functions during the past years.

We wish to report the following address changes: **H. James Kerr**, 11868 Oleander Drive, Royal Palm Beach, Fla.; **Leslie W. Powers**, 11959 84th Avenue, North Largo, Fla.; **Raymond H. Starr**, Koch Supplies, Inc., 1411 West 29th Street, Kansas City 8, Mo.—**Herbert L. Hayden**, Secretary, E. I. du Pont de Nemours and Company, Leominster, Mass.; **Albert S. Redway**, Assistant Secretary, 47 Deepwood Drive, Hamden 17, Conn.

# '24

The advent of 1962 brought changes in the lives of many of us. For **Frank Manley** it meant pulling up stakes in Nyack, N.Y., and returning to his native heath, Massachusetts. On January 1 Frank became president of the Fitchburg Gas and Electric Light Company, "one of the nation's oldest investor-owned utilities." Starting in the utility business with Charles H. Tenney and Company, in 1925, he has been with Tenney companies ever since. Fitchburg is one of that group. In 1937 Frank got a law degree at Rutgers, and since then has changed his field from engineering to land economics with all that includes. He joins a growing group of Alumni of our era heading New England utilities. One of the jobs Frank relinquished when he left Nyack was that of chairman of the Community College board of trustees. At a dinner where "informality outweighed sentiment" he was presented a few tokens of esteem including, appropriately enough for an M.I.T. man, a beer stein.

**Kenneth B. Walton** also started a new life this year, but in a somewhat different way. Ike is still president of his own company, Kents Restaurant and Baking Company, in Atlantic City, but on December 16 he was married to Mrs. Eva R. Stickel, publisher of the Margate (N.J.) Beacon and owner of the Margate

Printing Company. The bride, a widow, was given away by her son, while Ike's best man was one of his two sons, John G. Walton, 2nd. The new Mrs. Walton also has a second son, and all of them will live in Ike's home in Brigantine, N.J., Sand Dune Shanty. . . . **Paul Cardinal** moves up in the ranks of the Drug, Chemical and Allied Trades Association, Inc. A director for six years, he is now treasurer, a job he also fills for National Vitamin Foundation, Inc. . . . The **Amegagas** had a split Christmas. **Mike** stayed in Barcelona with daughter Julia and her family; **Hortensia** flew to Ohio to be with their other daughter, **Hortensia**, and her family. After all the holidays they have spent together as one family, it is probable that this kind of compromise left something to be desired.

A bit late with this one, but we didn't know about it until the **Rockwell Hereford's** Christmas card arrived. Their daughter Anne was married in August to Richard A. Rohrbach in San Francisco. Son David completed his Army duty just in time to arrive home for the nuptials. . . . All the way from Puerto Rico arrived a beautiful nautical card from Saro and **Al Roig** printed, ironically, in Boston. . . . The **Bateses** continue to be as busy and peripatetic as usual, what with traveling to meetings, visiting children, and just plain sight-seeing. **Phil's** activities of the year included one item that shouldn't have caused an old nature-lover any pause, but it did. It was "cymbidium-tending." Sounded like something to do with an orchestra, tympany section, but it turns out to be far more exotic: orchids. . . . The annual "**Nevin News Flashes**" has a cryptic bit. "Gerry is almost over her ailments, her arm is perfect and her back coming along fine. Hopes to shed the brace during the holidays." Certainly glad to know she's better, but your secretary can't enlighten you as to the cause. In the accompanying photo she looks as gay and charming as ever. **Jack**, by the way, did it again. Last year he repeated his previous win of the Super Veteran Tennis Championship, and this time we'll make no cracks about that Super Veteran bit.

Patty Robinson very kindly sent a clipping of Jane's marriage in October which we mentioned briefly at the time. Bill's father, now 95, gave the bride away, and his brother brought her down the aisle. Ginny, who must be all of 10 by now, was junior bridesmaid. Mr. and Mrs. Charles Owen Wilson will live in Wilmington. . . . While we're on the subject of nuptials, your secretary's oldest daughter, Joanne, is to be married on March 10 in the M.I.T. Chapel. . . . Looks as though **Norris Johnston** has retired. For years he had been in California as president of Petroleum Technologists, Inc. Then three years ago he moved to Dallas with the same title. Now he's back in California again, giving up his business as "consultant."

Just to keep you in touch with local affairs at M.I.T. in mid-January: the Tech Block across Massachusetts Avenue (Walton's, the old Coop) which was gutted by fire last month has been demolished. It's a unique experience to



be able to look across the street and see clear down what is now called the West Campus. There's a deepening hole where the 20-story Earth Sciences Building will soon start to rise. They're boring in back of Building 10 for the new Materials Center. The face of M.I.T. is changing fast. When you come back for your 40th, you'll hardly know the old place.—**Henry B. Kane**, Secretary, Room 1-272, M.I.T., Cambridge 39, Mass.

## '25

**Fred W. Waterman, Jr.**, President of the D. H. Scovil Manufacturing Company, whose death was announced in last month's notes, died of a heart attack while at his summer cottage. Fred had been quite active in the New Haven area where, in addition to his fulltime job as president of Scovil, he was a member of New Haven's Redevelopment Agency and had memberships in many clubs in the area. He was also a director of R. Wallace and Sons, silver manufacturers, of Meridan, Conn. He leaves his wife, two sons and three daughters. . . . News of the passing of two other members of the class has reached your secretary this past month. **Frank N. S. Thomson**, Course IX-B, died in Syracuse, N.Y., on June 2, 1960; and **Milton B. Barba**, field engineer at the Leeds and Northrup Company's District Sales Office in Fort Washington, Pa., died on Tuesday, October 3, 1961. Milton joined the Leeds and Northrup Company upon graduation in 1925 and was a former chairman of the Philadelphia Section of the Electro-Chemical Society. He is survived by his widow, one son and one daughter.

A news release from the Navy Bureau of Yards and Docks indicates that **Charles E. Knight**, General Superintendent of Manufacturing Services for the Plastics Division of the Monsanto Chemical Company in Springfield, Mass., joined with leading representatives of private industry and Navy civil engineers in a discussion of common problems in maintenance management at a three-day workshop held in Washington, D.C., early in December. The principal topic for discussion was how to get the most value out of each dollar spent in maintenance management, a relatively new industrial field in which Mr. Knight is one of the outstanding authorities and author of a number of articles. . . . The Akron Beacon Journal of Akron, Ohio, notes that **James A. Holland** retired on December 31 after 12 years' continuous service on the Boston Board of Education and then on the consolidated Boston-Northampton Board of Education—six years as president. He did not seek re-election; but immediately he finds he has traded one civic duty for another, in that he has been chosen as treasurer of the Peninsula Library and Historical Society. In addition to his civic duties, he is manager of store designs and engineering for B. F. Goodrich Company in Akron.

Among the many Christmas greetings received this year was a beautiful card

from **Masaru Kametani** in Tokyo, Japan. Those of us who were privileged to renew acquaintance with "Kammy" last June still have pleasant memories of Alumni Day in 1961. . . . The November 1961 issue of *Industry*, a monthly publication of the Associated Industries of Massachusetts, noted that at its 46th annual meeting our own **Don Taber** was elected to the board of directors for a three-year period. Don is, of course, the treasurer of the American Pad and Paper Company of Holyoke, Mass.—**F. L. Foster**, Secretary, Room 5-105, M.I.T., Cambridge 39, Mass.

## '26

On this gorgeous mid-January morning overlooking the temporarily peaceful Atlantic, I frankly don't feel a bit like writing class notes. Therefore, if you get that impression from reading them, your impression will be correct. However, this is a natural phenomenon. Many things you do, such as getting up and going to work in the morning, preparing a speech for the National Society of Do-Gooders Convention, all require a bit of selfnudging, so let's consider myself nudged and get going. This is the first time at Pigeon Cove in a month because of a sacroiliac that has had to be favored to the extent of staying out of automobiles as much as possible. You have heard of people knocking out their backs by sneezing or tying a shoe lace. I can now top these. Early one morning just before Christmas I started laughing at a story I was telling Ruth and when I straightened up, the back was out—really out. The story? It's a true one—the experience of a business associate a few days earlier. He had stopped at New Haven on the way to Boston from Wilmington and was standing on the platform waiting for the late afternoon train to Boston when along came a "lush." With him was a Yale bull dog equally as drunk. To top it off the dog's name was George! The master kept addressing his dog, "Georgsh. Do you wanna take the nesht train wimme and 'ave a couple moar beers." To which George would reply, "Woof, Woof." Well so much for the dog story and the sacroiliac, we still haven't started the notes.

Looking into the file the first thing we find is **Dave (Crockett A.) Harrison's** Christmas card which has become more and more of a production each year. For '61 it was four pages 7 x 9 with photographs of the family and a current history. With five daughters you can see how this becomes a volume. Dave left Bendix last summer and purchased controlling interest in Arcweld Manufacturing Company of Grove City, Pa., of which he is now president. How about sending us some literature on the company products, Dave? . . . Here's a clipping that somehow escaped us until now, but it was news to me upon discovering it and I'm sure it will be news to you. It's from the Bridgeport, Conn., Sunday Post. "**Eben B. Haskell**, manager of the United Illuminating Company's commercial and industrial sales depart-

ment, has been elected assistant vice-president." The clipping also states: "Mr. Haskell is chairman of the board of directors of the Quinnipiac Valley Development Corporation. He is past chairman of the Area Development Committee of the Electric Council of New England and past chairman of the Connecticut Industrial Development Council. He is chairman of the M.I.T. Second Century Fund for the New Haven, Bridgeport and Waterbury areas and holds membership in the Rotary, Quinnipiac and Lawn Clubs in New Haven." Eben has been such a loyal member of the class of '26 that we were pleased to come across a clipping telling of his activities; we could never obtain it from Eben. We should check Eben since he is so active in New Haven to see whether the S.P.C.A. there approves of bulldogs imbibing. . . . One of our ecclesiastical classmates appeared in a clipping from the Bath, Maine, Times recently. "**Reverend Malcolm A. MacDuffie**, formerly principal of the famed MacDuffie School for Girls, Springfield, Mass., and now pastor of the First Congregational Church of Waterville, Maine, will be the speaker. . . ." Some of you were asking about Malcolm at the reunion; this tells you where he is. . . . We have had two address changes for **Duncan A. Crawford** in the past several months, from Atlanta, Ga., to Buzzards Bay, Mass., and now from Buzzards Bay to 15 Prospect Road, Westport, Conn. . . . At reunion last June, **Sid Baylor** explained why we have seen so little of him. He has moved to Johnson, Vt., 40 miles or so off the Canadian border. Sid mentioned that his wife started raising primroses as a hobby and now is the largest grower east of the Rockies, doing business as Sherbrook Farm. My memory is a little vague, but I think Sid still runs his business, which involves a lot of traveling, by commuting from Vermont. Since the therapy for a flabby back involves walking a minimum of two miles each day and since this is a nice day to walk we will now say "Cheerio."—**George Warren Smith**, c/o E. I. du Pont de Nemours and Company, 140 Federal Street, Boston, Mass.

## '27

A reminder about our 35th Reunion to be held June 8-10, at Oyster Harbors Club, Osterville, Mass.! We are planning on a large attendance and hope as many as possible will make it. Have just had a note from **Mike Davier** that he will definitely be there. Cards asking for individual decisions to go will be out soon. . . . From a recent New Haven, Conn., newspaper clipping, we learn that **B. Allison Gillies** has been elected a director of Flexible Tubing Corporation, Guilford. Bud was formerly a director of Kenyon Instrument Company, Brewster, N.Y., recently acquired as a wholly-owned subsidiary of Flexible. He is a partner and West Coast representative of Jones and Gillies, aviation and management consulting firm; is a director and member of the executive committee, the Marquardt



Corporation, Vay Nuys, Calif.; director and member of the executive committee, Pacific Airmotive Corporation, Burbank, Calif.; vice-president, treasurer and director GEN Corporation, Burbank, Calif.; and president and director, California Minerals Corporation, San Diego, Calif. After graduation, he was a test pilot and engineer for several aviation concerns until he joined Grumman Aircraft Corporation in 1934, becoming a vice-president and director in 1938. He resigned from Grumman at the request of the Bureau of Aeronautics personnel, U.S. Navy, and joined Ryan Aeronautical Company in 1944 as assistant to the president in charge of the flight test program on the FR-1 Jet-Prop fighters.

**Frank Marcucella**, formerly vice-president and general manager of the John A. Volpe Construction Company, was recently named president of this company. Frank has had more than a quarter of a century of experience in the construction industry, having served as construction engineer at the U. S. Military Academy at West Point and as construction superintendent of numerous major projects before first joining the Volpe Company as job superintendent in 1942. . . . Under the auspices of First Church of Christ, Scientist, Dedham, Mass., **Charles M. Carr** recently gave a lecture at the high school auditorium there on "How Christian Science Can Help You." He devotes his full time to the public practice of Christian Science, having withdrawn from business in 1942. He is an authorized teacher of Christian Science, and served from 1944-1954 on the Christian Science Committee on Publication for the State of New Jersey. . . . **Robert C. Wallace**, former vice-president-engineering and director of engineering, Diamond T Motor Truck Company, has been named director of engineering, Lansing division of White Motor Company. Bob more recently has been assistant chief engineer for the White Division, White Motor Company. His career in the automotive industry began in 1927 when he joined Stutz Motor Car Company as factory service manager. Later he was associated with the Marmon Herrington company of Indianapolis as vice-president-engineering. He went from there to Diamond T. Earlier this year he accepted the assistant engineer post with the White division. . . . Word has reached us that Dr. **Harold E. Edgerton** has been elected an honorary fellow of the Institute of Amateur Cinematographers, Surrey, England. The I.A.C. is the world's largest all movie international organizations.

A member of another class sent us a clipping from the October 29 issue of The Wall Street Journal concerning **Frank Staples**, President of the American Molasses Company, who conducted the company's annual meeting in October. American Molasses recently acquired Top-Scor Products Corporation, Inc., of Louisville, in an exchange of stock. Top-Scor, which makes products for the baking and dairy industries, has annual sales of \$500,000. The new operation will be consolidated with a wholly-owned subsidiary, Breddo-Food Products Corporation, Inc., Kansas City, Kansas.

A search of the current directory for members of the class of '27 who have participated in the activities of the Alumni Association reveals the following impressive list: Alumni Term Member of the Corporation, Clarence L. A. Wynd; Class Representative on the Council, Glenn D. Jackson, Jr.; Class Representatives of M.I.T. Clubs, Richard P. Hawkins, Mexico City, and William L. Taggart, Jr., Cambridge; Committees of the Association, Dwight C. Arnold (Audit and Budget); Alumni Fund Board, Dwight C. Arnold. Class officers and class agents are James A. Lyles, President; J. S. Harris, Secretary; Richard P. Hawkins, Class Agent; Glenn D. Jackson, Jr., Class Agent and Reunion Chairman; and J. Robert Bonnar, Reunion Treasurer. Alumni Representatives on Departmental Visiting Committees include classmates Edward D. Stone (Architecture) and Samuel S. Auchincloss (Physics).

Officers of M.I.T. Clubs include Arthur M. Hill, Vice-president, M.I.T. Club of New Mexico; John J. Dunn, President M.I.T. Club of Eastern and Northern Maine; William J. Heymans, Secretary-Treasurer, M.I.T. Club of Belgium; George M. Cunningham, Vice-president, M.I.T. Club of Southern California; Fernando A. Canad , President, M.I.T. Club of Spain; Glenn D. Jackson, Jr., President, M.I.T. Club of New Hampshire; Arturo Marqu s, President, M.I.T. Club of Uruguay; and E. Robert de Luccia, President, M.I.T. Club of Oregon. On the Educational Council of the Institute are: Lawrence B. Grew, New Haven; Richard L. O'Donovan, South Miami, Fla.; Ralph B. Johnson, Honolulu; F. S. Badger, Jr., Indiana; Morgan A. Collins, Jr. and Frederick J. Hooen, Detroit, Mich.; J. Robert Bonnar, New York City; Clarence L. A. Wynd, Rochester, N.Y.; David E. Truax, Charlotte, N.C.; Howard P. Ferguson, Cleveland, Ohio; W. G. Payne, Dayton, Ohio; Howard H. Burt, Youngstown, Ohio; Henry T. Lyons, Allentown, Pa.; Albert C. Smith, Scranton, Pa.; C. G. Davies, South Carolina; L. B. Peterson, Norfolk/Newport News, Va.; and Arturo Marqu s, Uruguay. Past presidents of the Alumni Association from '27 are Dwight C. Arnold, 1955-56, and Clarence L. A. Wynd, 1960-61.

It is with deep regret that we record the death in January of **Gilbert G. Emerson** in Upper Montclair, N.J., after a brief illness. He was an aeronautical engineer for Curtiss-Wright Corporation until 1942, when he entered the Naval Air Corps. He was released from active duty as a commander in 1947 and retired. After his retirement, he kept busy in a small metalworking shop behind his home. Among other things, he created a new hunting rifle designed to pack enough power to kill any animal on the North American continent, a new telephoto lens, and modifications of model trains and marine engines. Mr. Emerson was active in the Montclair Community Chest, and was a member of the Montclair Chapter of the Society for the Preservation and Encouragement of Barber Shop Quartet Singing in America, the American Ordnance Association and

the Navy League of the U.S. He was an endowed member of the National Rifle Association. Born in Titusville, Pa., he had lived in Upper Montclair for 13 years; previously, he resided in Washington and Passaic. He is survived by his wife, Mrs. Harriet M. Emerson; a son, Navy Lieutenant Andrew G., serving in the Pacific; two daughters, Mrs. Nelson J. Kistler of Montclair, and Miss Katherine G. Emerson, at home, and one grandchild.

The following new addresses have been received: **Elmer Andrews**, 64 Ellison Hills Drive, Rochester 25, N.Y.; **Henry W. Newell**, 4730 North Oakland Avenue, Milwaukee, Wis.; **Roger L. Nowland**, King Street, Stamford, Conn.; **Middleton L. Perry, Jr.**, 5240 Reinhardt, Shawnee-Mission, Kansas; **Robert B. Watson**, 311 South Lawsona Boulevard, Orlando, Fla.; Miss **Louise Wingate**, 879 Main Street, Fitchburg, Mass.; and **Lester B. Woolfenden**, Route #1, Box 10, Paducah, Ky.—**J. S. Harris**, Secretary, Shell Oil Company, 50 West 50th Street, New York 20, N.Y.

## '28

An item in the Western Reserve Democrat, Warren, Ohio, for November 30, 1961, tells us that **Joseph W. Gaffney**, Chicago general purchasing agent of Sears, Roebuck and Company, addressed the Warren Rotary Club at the Hotel Warner Wednesday noon. His topic was titled, "The Economics of Purchasing and Distribution." Joe has been with Sears since graduation except for a military service period during the war. He has managed Sears stores in 10 different cities throughout the country. . . . In a news release from the Directorate of Liaison and Information, Joint U.S. Military Group, Spain, dated November 17, 1961, we have learned that **Hector E. Hagedorn**, civil engineer for JUSMG, Spain, Directorate of Materiel, earned an outstanding performance rating for the superior technical and engineering ability, tact, and diplomacy he demonstrated during negotiations with the Spanish Air Force concerning real estate requirements. This was his second outstanding performance award since joining JUSMG in 1953. Hector has spent approximately 25 years with the United States Government in various fields of engineering service. During the war years he was with the U.S. Corps of Engineers as chief construction engineer for various base sections and headquarters' offices in Australia, New Guinea, and the Philippines. His present home is in Madrid. Our congratulations, Hector, both on your awards and excellent record of achievement!

In still another news release (Eversole Associates, Inc.), Abbey Etna Machine Company, Perrysburg, Ohio, announced the appointment of **William E. Shenk** to the office of vice-president of the company. Prior to this, he served with U.S. Steel Corporation, American Transformer Company, and McKay Machine Company. During his 15 years at U.S. Steel, Bill's developments included oriental silicone steel, non-destructive

test methods, and the first roof temperature pyrometer for open-hearth furnaces. While at McKay Machine Company, where he was electrical engineer, metallurgist, and finally director of electrical engineering, Bill designed all rotary welding transformers used on pipe mills—the largest was for 275,000 amps welding current. Congratulations, Bill, and best wishes for all success in your new post. . . . During a meeting of the American Institute of Chemical Engineers in New York City, **Jim Donovan** had dinner with **Howard R. Batchelder**. Howard is still with Battelle Institute and enjoying a very satisfying career. . . . Jim received a Christmas card from **Carl** and **Ethel Bernhardt**. The Bernhards had an unfortunate auto accident recently, but apparently they are now about recovered and they expect to spend part of the winter in the Southwest. . . . We regret to report the death of **Frank Thas** on September 11. Frank was graduated in Course II and was recently design engineer for Sperry-Rand Corporation.—**Walter J. Smith**, Assistant Secretary, 15 Acorn Park, Cambridge, Mass.; **George I. Chatfield**, Secretary, 11 Winfield Avenue, Harrison, N.Y.

# '29

**Wally Gale** wrote from Tokyo late in December, and I quote his letter in its entirety: "We have waited to thank you for your nice Christmas card until we could report on last evening's (December 27) meeting of the M.I.T. Association of Japan here in Tokyo. Dr. Shikao Ikehara, '28, President of the Association, and Mr. Yoshinori Chatani, '22, perennial 'Mr. M.I.T.' of Japan, arranged a tasteful and tasty dinner attended by some two dozen Alumni, wives, and alumnae. Mr. **Masaru Miyauchi**, Managing Director of Tokyo Otis Elevator Company, and Mr. **K. Murakami**, head of the Industrial Engineering Department of Nihon University, were among those present. I had the privilege and great pleasure of describing the objectives and opportunities of the Institute's Second Century Fund program, and reporting on progress to date. The old adage that Alumni interest increases as the square of the distance from Cambridge was never more true as everyone showed a great hunger for news of M.I.T. and a tremendous pride in being Alumni. Although they have had almost a surfeit of visitors from the Institute this past year (I would judge), they are looking forward to even more in '62. I can assure any Alumni, student, or staff member a cordial welcome. . . . Joan and I are completing our eighth week in Japan; or, I should say, our 10th, as we came over on a Japanese freighter—the Argendina Maru. Everyone who visits this country raves about its beauty and friendliness, and all I can say is, 'Amen!' Every fourth visitor writes a book about the place, so I shall desist. We were here long enough to see some places not on the JTB tour circuit, and went as long as seven days in a row without seeing

another 'foreigner'—around the Keiwa peninsula, for example, where we ate and slept 'pure Japanese.' In December, the Japanese inns, and especially the temples and shrines, are a bit draughty and cold on the stockinged feet. November was grand, however, and we got in some golf on some fabulous courses, such as **Kawana** and **Shirahama**.

"We have accomplished the purpose of our visit by having Christmas and a week long visit with our son Tom, who teaches at the Canadian Academy in Kobe. We 'did' Kyoto together, where we spent a total of 11 days. This was hardly enough for this ancient capital and cultural center of Japan. Tonight we fly on to Hong Kong on PAA (I hope **Jim Magenis** is our check pilot). We spend a month there, less a week for a visit to Bangkok. By brushing up very slightly on our geography, Joan and I discovered that **Melvin Village, N.H.**, was about the same distance from Hong Kong either way, West or East. So we're going to poke westerly on the Lloyd Triestina Line, touching Ceylon, India, Egypt, and Italy on our way. Finding ourselves in Naples on February 21, we have decided to work in our next trip to Europe by spending a month in Italy. Hope to see the **Fred Cellers** in Milan (he is with AMP, Inc. in Paris). Will be home April 1, and look forward to seeing you then!" From all appearances, Joan and Wally have really had a ball since last October. We all envy them.

From the Lynn, Mass., Post, we learn that **George J. Burke**, Course IV-A, was recently elected to the Board of Public Works in his hometown of Swampscott. As reported some time earlier, he is in the architectural, engineering, and contracting business with his sons, **George, Jr.**, and **John F.**, in nearby Salem, where they have recently completed a new business center. George is president of the firm which operates this center—Colonial Realty Trust Corporation—and the boys are directors of the firm. . . . The Dallas News recently held an interview with **George P. Walker, Jr.**, Course III, and his mother, Mrs. George Pinckney Walker at their century-old family ranch in Center Point, Texas. Both George and his spry, charming, 76-year old mother are taking active parts in Major General Edwin A. Walker's zealous personal crusade against communism in what they believe to be a family tradition of patriotism. George graduated as a mining engineer; his brother is a 1931 West Point graduate.

It is with regret that we learn of the death of **Carl G. Schesch**, Course XVI, in an automobile accident in Rutherford, N.J., on October 25 last. In a collision with a truck, all three occupants of Carl's car were killed. He was from Paramus, where he had lived with his wife and three children since July. Prior to that, they had lived in Teaneck for 10 years. Carl was a graduate of Armour Institute as well as an M.I.T. alumnus and former teacher at the Institute. He held degrees in both mechanical and electrical engineering. He was employed by Radio Corporation of America at Harrison. . . . We also report with regret the death of Captain **Melvin E. Meister**, Course II, on March

19, and Colonel **Cleon J. Gentzkow** on April 8, both last year.—**Fisher Hills**, Assistant Secretary, 62 Whittemore Avenue, Cambridge 40, Mass.

# '30

As the regular readers of these items know, I am particularly intrigued by contrasts, and this month's returns present an especially striking one. **Lou Gitzinger**, reporting from Dayton, Ohio, has set a new record for succinct conveyance of information. His report comprises just two words: "retired—fishing." . . . **Jim George (Papadopoulos)**, on the other hand, at the end of a very interesting account of his activities had some difficulty in finding sufficient space to insert his signature. Some years ago Jim decided to drop his original surname because of the orthographic problems it generated, only to find, ironically, that a fairish number of people still ask him how to spell his last name. Jim works for the Bureau of Weapons on Naval Weapons Systems ("partly intelligence, partly operations analysis"). He is also teaching calculus at American University in Washington. His son, **Kimion, M.I.T.**, '63, is married and has a baby son, **Philip**. Jim will be eligible for retirement after 30 years' service with the federal government in June, 1963. His tentative post-retirement plans include teaching in Miami during the winter, spending summers on Cape Cod, and writing a series of mathematics textbooks "which are readable and understandable." He reports having seen **Bill Wye** and **Red Deyarmond** recently. . . . **Ed Giroux** is teaching mathematics at Newton South High School in Newton Centre. His son, **Gerald**, is a sophomore at Lexington High School. His spare time activities include remodeling an old (1794) farmhouse in W. Baldwin, Maine, and being commanding officer of Naval Reserve Composite Company 1-37. He occasionally sees **Fred Garvin**, who is still working as an engineer for the city of Boston. . . . **Bob Reynolds** recently launched a new enterprise, Reynolds and Foster, Inc., "specializing in advertising, sales promotion and related communications activities," with offices at 8 Newbury Street in Boston. Bob is president and heads the marketing and contact group of the new agency. He is a past president of the New England chapter of the American Marketing Association and served as director of the local chapter of the Association of Industrial Advertisers. Best of luck, Bob.—**Gordon K. Lister**, Secretary, 530 Fifth Avenue, New York 36, N.Y.; **Ralph W. Peters**, Assistant Secretary, 249 Hollywood Avenue, Rochester, N.Y.; **Louise Hall**, Assistant Secretary, Box 6636, College Station, Durham, N.C.

# '31

**Tom Fearnside** has been elected to the board of directors of Stone and Webster Engineering Corporation. Tom, who was



named a vice-president of Stone and Webster last year, joined them in 1940. Although I didn't know Tom in our undergraduate days, it was a pleasure to meet him and his charming wife at our 30th Reunion and have a chance to chat with him for a while. He doesn't know it, but his name came up again last November when another man from Stone and Webster, who sat next to me on the train between London and Cardiff, told me that he had worked for Tom and said Tom is one of the ablest and best liked men in Stone and Webster. . . . While we were in Rome last Fall, **Roberto Andreani's** mother invited Louise and me to tea. She is a wonderful hostess and we thoroughly enjoyed meeting her and Roberto's sister, as well as Roberto's nephew and the young man who helped him win some of his trophies. We've corresponded a number of times since Roberto's death of the Asiatic flu, and Mrs. Andreani has thoughtfully told me of the post-humous honors accorded Roberto which have been reported earlier in these columns. . . . Another highlight of our trip was when we saw **Bill Stelrecht** and his family in Stuttgart. Bill is a patent attorney, has a charming wife and three beautiful daughters. After taking us to dinner and ordering what was without doubt the finest meal we've ever had, complete with Stuttgart wine, Bill, his wife and one of the daughters showed us the town. Stuttgart is a beautiful city and Bill's home is located right at the top of one of the high hills overlooking the city. Bill would enjoy hearing from other classmates who are passing through Stuttgart.

This column wouldn't be complete if I didn't express my thanks to **Gordon Speedie**, who took over the writing of the Class News while Louise and I enjoyed a combination business and pleasure trip to England and Europe. He did a splendid job. . . . And now, it is my sad duty to report belatedly the death of Captain **Claude H. Bennett, Jr.**, who passed away on May 15, 1961. Word of his death has just been received.—**Edwin S. Worden**, Secretary, Minute Man Hill, Westport, Conn.; **Gordon Speedie**, Assistant Secretary, 90 Falmouth Road, Arlington 74, Mass.

# '32

There are only about three months until our 30th Reunion. If you have never attended a reunion, this one should be a "must." These notes are not and never can be a substitute for the personal contacts you will make at a reunion. **Thomas W. Mackesey** has been named dean of the faculty at Cornell University after having served as professor of regional planning and dean of the College of Architecture for nine years. A specialist in regional planning, he is largely responsible for the prominence of Cornell programs in city and regional planning. He helped plan the Sampson Naval Training Station during World War II and since then has participated in studies for the site selection of Brasilia, the new capital of Brazil, and as consultant to the New

York State Power Authority, for the development of the St. Lawrence Valley. Last year he was project architect for the design of the new National University of Laos, and as visiting professor he lectured on architecture and regional planning at the Royal Academy of Art in Copenhagen and at a number of European universities. During the past summer he visited most of the major cities of western Europe while studying current European problems and achievements in civic design. He has also acted as a consultant on community planning problems to a number of cities and towns in New York and other states. . . . At a recent meeting in Springfield, Mass., **Art Marshall** discussed the recent trial of Eichmann, which he attended. Art has offices in Springfield and Boston with special emphasis on labor law, labor relations and government regulatory law. . . . **Tom Sears** passes on a letter from **Herb Ross** in Switzerland: "Just returned to Lausanne, Switzerland, today to find your letter of November 17 waiting for me. My apologies for not answering, but I have been traveling on the continent for the past three months on business, and mail doesn't always reach me promptly. We expect to be here for three years, and have leased a new home overlooking Lake Geneva. It's a beautiful country here, but at this time of year you miss old friends and acquaintances. Reunion is a big question mark for me. I will be returning to the United States next summer for two or three weeks and may be able to make my visit correspond, but can't be sure yet; at any rate I would like to be kept abreast of plans even though I can't help much this time. My wife and I raise a cup to you and your family from a long way off and wish you a Merry Christmas and the very best in the New Year." Herb's address is: Villa Vue du Lac, Chémia d'Oche, St. Sulpice V.D., Switzerland.—**G. Edward Nealand**, Secretary, Room 3-137, M.I.T. Cambridge 39, Mass.; **Elwood W. Schafer**, Assistant Secretary, Room 10-318, M.I.T., Cambridge 39, Mass.

# '33

Hats off to **Asa H. Jewell** who was sworn in last fall as mayor of Franklin, Tenn. Described in the local press as "51-year old farmer-businessman," Ace won the first contested race for mayor in over 35 years. A native of Kentucky and former restaurant operator in New York, Ace and **Gerry Kincade** (where is he these days?) kept a good part of Course XV under control as students; good training for his present post! . . . And a salute, too, to **Athel Spilhaus**, scientist extraordinary and dean of the Institute of Technology at the University of Minnesota. Athel is on leave this year to oversee the preparation of the United States Science Exhibit at the Seattle World's Fair. Let's go, boys, you've been thinking about getting up to the Northwest for some time now! Athel reports, too, that in December he represented the United States at Rizal Science and Technology Week in Manila.

(These notes are being written en route from Detroit to New York and nobody on the plane professes to know what Rizal Week is; we'll have the answer next month.)

**Bill Barbour** has done it again and gets hearty congratulations from the class. Bill has started a new company, Magnion, dealing with cryogenics and high powered magnetism. For the fellow XV men, cryogenics is just the hard way to spell low temperature. In combination, these two fields hold great promise as science and technology move ahead. . . . Had a most pleasant talk with **Dave Lee** in Detroit. Dave manages truck advertising for Ford, so look closely the next time you see an ad. Dave, I learned from a close associate, is doing a brilliant job as chairman of the school board in nearby Bloomfield Hills; like Ace Jewell, this is another carryover from Dave's fine hand in running the Deke House many years ago. Dave's older son, Jr., gets his degree at Brown this June, plans to be married (to a Boston girl, thank you), and hopes to head for Air Force O.C.S. for his tour of duty. Younger son, Tom, is a sophomore at Denison in Ohio—doggone good school—Number three Kimball graduated from Denison a year ago. . . . **Bill Klee** came out from behind that stack of steel tubing in Warren, Ohio, recently to help M.I.T. In the course of correspondence, we learned that Bill took a quick trip to Europe in December to 'interview' his first grandchild. Bill didn't say who did the talking. Bill also has a son-in-law working for his M.A. at Chicago. . . . Speaking of coming out from behind, **Warren Henderson** laid aside the fishing rod in Pompano Beach long enough to write one of those rich, rare, and racy bits that make one hope he will set out on a literary career; Warren's writing has succulent substance and spicy style, the kind Esquire would pay handsomely for. He could start on the subject of Black Angus cattle, but the piece would be threaded with his homespun philosophy and his incisive commentary on everyday life. Any additional volunteers to serve as his agent? . . . **George Henning** reports a quick trip to Austria and Italy in November. He and Lucy had to hurry back, bless them, to work on our favorite Second Century Program. . . . **Cal Mohr**, our regular midwestern correspondent, reports that **Harry Summer** and **Dick Smith** attended the M.I.T. Club meeting in Chicago to learn about computers. . . . On the move, **Dr. Helen F. Tucker, V.**, from Philadelphia to Elkart, Ind., where she is working at the Miles Laboratories. Anyone for vitamins? Happy spring.—**R. M. Kimball**, Secretary, Room 7-206, M.I.T., Cambridge 39, Mass.

# '34

**Hoyt P. Steele** has been named by the General Electric Company to the position of manager of a new special unit to handle G.E.'s anti-trust suits. This new unit under Steele's direction will represent G.E.'s interests on a continuing basis in matters growing out of the cases brought



against the company in Philadelphia in 1960. . . . **Henry G. Lambert**, our New Zealand representative, sent a clipping from the New Zealand Herald in Auckland telling of a gift to Auckland University. The gift, from a Sir William Goodfellow, is for a chapel to be known as the Maclaurin Chapel, and will commemorate Sir William's son killed in Europe in 1944, and the late Richard Cockburn Maclaurin, the sixth president of M.I.T. and a graduate of the university. This secretary had the pleasure of knowing two of Mr. Maclaurin's sons. . . . At times it is a delightfully small and personal world. I attended the October 19 National M.I.T. night dinner in Washington, D.C., and met for the first time Fred Willcutt, '26. We grew up in the same small town, went to the same high school, a few years apart, and knew many people in common.

Would any one of our classmates who is informed in the oriental cultures please advise your secretaries of the Zen philosophy? Where the Western attitude is to extract class notes out of unwilling classmates, the Zen teaching might give us a more relaxed and in the long run more fruitful approach. Does it really matter that there are '34 notes in each Review issue?—**Malcolm S. Stevens**, Secretary, Westfall-Chafee Laminates, Box 93, West Barrington, R. I.; Co-Secretaries: **G. K. Crosby**, Longwood Road, Huntington, W. Va.; **J. P. Eder**, 1 Lockwood Road, Riverside, Conn.; **Harold E. Thayer**, 415 West Jackson Road, Webster Groves 19, Mo.

## '35

The persistence of our regional secretary from Haverford, Pa., **Hal Bemis**, has paid off again. Ever since **Bob Olsen** wrote Hal last spring that he was going to Mexico in the summer and would write about it when he got back, he has been getting a follow-up every month. Finally Bob's letter has arrived and I am sure you will find it as interesting as Hal and I have. "You young presidents are certainly persistent! But as a result, you're doing a fine job getting news. Our trip to Mexico was the realization of one of the fringe benefits of teaching. We travelled via station wagon along the beautiful Skyline Drive, the Blue Ridge Parkway in Virginia, the Great Smokies in Tennessee, through Georgia, Mississippi to New Orleans, and then on through Houston and San Antonio to Monterrey, Mexico. We camped in state national parks along the way and found many of them to be real plush, with running water, foresters who bring wood right to your campsite, and electric lights. If you want to see the country inexpensively, go by station wagon. We enjoyed every minute of it. We found Mexico to be a very busy and rapidly growing country. Many of our misconceptions were converted. The traditional sleeping Mexican is unusual. Most Mexicans we met were alert, intelligent, hard working. However, they have learned how to live graciously, even those who are not too well off. They enjoy good music, long dinners, and much

conversation. They were much more honest than we had been led to believe. We were robbed once on our trip, but in the good old U.S.A.! They have a high respect for family life, rarely leave the hometown folks for a better job elsewhere.

"Opportunity for industry in Mexico is great, for Mexicans. They welcome help and advice, but are not interested in Americans owning property there; in fact, it is legally impossible. We saw many new manufacturing companies growing rapidly, eager for help, but proud of their own accomplishments. Mexicans are a proud people, unhappy if you take pictures of their poverty and ignore their accomplishments. Mexico, in fact all South America, resents the implications in Time Magazine and most U.S. literature that they are backward. They point out that accidents of geography and climate have done more for the U.S. than any other one thing. Lack of usable rivers, impassable mountains have made the Latin American problem much more difficult than the problem in the U.S. Their progress compared to other tropical countries with similar geographical obstacles is remarkable. They welcome help, resent the condescending air—the rich uncle—poor cousin approach of most Anglos. ('Anglos,' is the term they use for U.S. citizens because they are Americans the same as we are.)

"The Russians look on them as brothers; we look on them as poor relations. The amount of money we pour in is monumental compared to the trickle from Moscow, but we have much to learn—not from Moscow, but perhaps from our own heritage of Christianity—if we are to claim them as brothers, also. The very rich and the industrialists are not interested in Communism. They like the status quo; it has made them rich. The very poor, by far the majority, are really much happier than our very poor. Perhaps that is why they stay poor. To live in an adobe hut and eat tortillas (base of corn) does not require much effort. Nevertheless, a rabble-rousing communist could easily create jealousy and envy in the poorer people of their very rich minority. Our approach of helping increase the general standard of living through increasing productivity is certainly basically sound, but painfully slow. All of Mexico and South America is struggling to industrialize to the extent that mechanization is now pretty much a status symbol.

"My own job was most modest but most interesting, to me at least; I acted as an advisor to such industries as motorcycle manufacturing, cement mixer-gravel pit companies, manufacturers of reinforcing rods, and glassmakers. Most questions revolved about ways and means of increasing productivity, but some concerned inventory control and maintenance improvement. I can say that I finally used calculus directly when I had to develop a tailor-made formula for inventory lot sizes in the crystal manufacturing plant. Hope this gets me out from under the hammer, Hal and Al.

"Familywise, my 16-year-old son is playing center for the local high school,

so we are head over heels in football here. Penn State is having a fine year, and we enjoy that. My oldest boy is in the Navy in electronics and soon leaves for the Mediterranean or Caribbean. My wife and I are trying to get a new church built here in State College and are still doing demonstration church school teaching throughout the state." It not only gets you out from under the hammer, Bob, but gets you top billing this issue and a very special thanks from us all for taking the time to write.

Two other letters arrived too late to be included in last month's notes, one from **Don Wood** in Corpus Christi, Texas, and the other from **Art Haskins** in Bath, Maine. Here's Don's letter: "My question to you in the early part of this year as to whether or not I was the proper one for this job, when you selected me as district secretary for this area, was, apparently, well founded as the results of your selection have not been fruitful. I am afraid that I have not had any time to devote to the job as district secretary, outside of the last letter I have written and this one. I have been away from the office and Corpus Christi about 75 percent of the time this year; so, you can well imagine that my time is well occupied when I am here. In this immediate area we did not suffer too badly from Hurricane Carla. Most of us 'holed up' in our homes and waited for it to blow over, which, by the way, took quite some time. I boarded up my windows, but I do not think it was entirely necessary. We did lose many large limbs from trees and there was much debris around the neighborhood. However, this is the first hurricane that I have seen in this immediate area since having moved here in 1953, so I guess you can say that we are quite fortunate. With regard to what has been occupying my time, we have been getting into additional marine operations for the movement of Reynolds Metals products and raw materials by water. We now have under construction two mid-bodies to be incorporated in two T-2 tankers and which will be used to haul our alumina from Corpus Christi to our plants on the Columbia River. Upon completion of discharge there, the vessels will go on time-charter to California and Hawaiian Sugar Company and proceed to Hawaii to load raw sugar for Galveston. We, also, have under construction three oceangoing barges of about 7,200 tons deadweight each, which will be used in hauling our bauxite in a shuttle operation from British Guiana to Trinidad.

"With regard to me, personally, I have recently moved to 247 Rosebud, where we have more room. This Christmas I expect to have my three daughters with me; Wendy, 23; Trilby, 20; and, Rachel, 6; and, I haven't given up yet as my wife is expecting in the spring. (**Jack Orchard** can prepare to ship that plaque any day now.) I very seldom see anybody from our class, particularly in this far corner of the United States. However, if any of our classmates ever come this way, I hope they will look me up. **Dick Whitmore** dropped in town this year and I had a pleasant evening with him at my home, and I saw him again later, unexpectedly,

on a flight from Newark to Richmond, Va." Many thanks for your most interesting letter, Don, and don't worry about your district secretary job. If only half our 34 secretaries wrote once a year, we'd have lots to read.

I am going to print Art Haskin's complete letter because he and **Arthur Thompson** have something here for all of us: "My contact for this month is Arthur A. Thompson, Sorrento, Maine, Course IV. I think I hit him at the wrong time. He apparently is a hunter, and in season, hunters have no time for anything but hunting. But I certainly have to hand it to him. He's been able to do something I've never been able to do. That is, to get the good wife to answer his correspondence for him. If I were that good, Dot would be writing this instead of me. Anyway, that would probably improve your column. I quote from Mrs. Thompson's letter: 'Arthur Thompson gave me a note to write to you about himself. He said very, very little: 1) That he is working on a high school for the City of Bangor in Maine; 2) that for recreation, whenever he has spare time, he "heads for the woods." I would like to add that he is an archery enthusiast; that he does excellent sketches and drawings of the outdoors and exhibits in this locale now and then, and that he has given his time, when requested, for community project work. Signed Rosamond Thompson, Mrs. Arthur Thompson, Sorrento, Maine.'

Next time I'll write Mrs. Thompson and ask her if Arthur is really a hunter, architect, builder, and if he hunts with a bow and arrow. This could get interesting." Take note, all of you with so little time to write, and let your wife read these notes. This is an open invitation to you, the wives of the Class of '35, to write a letter to me, or any of the regional secretaries at the end of these notes, and tell us about your life with an M.I.T. graduate—what he is doing for a living, about your children, your travels, and your activities. I would like very much to hear from you and so would the rest of the class.

Here are some short notes. **Art King** writes: "Since you made it so convenient, I'll reply forthwith to your question as to what part I've played in electing our first Republican mayor in Louisville in 28 years. The answer, truthfully, is—not very much. I pitched in some of my own hardearned money, and also helped raise some dough from others. I was treasurer of the 1960 Republican campaign committee for the county, but begged off this year due to pressures of business (new company, etc.) Bill Cowger, our new mayor, is good personal friend." . . . **Dick Shaw** reports his son Jonathan is at the University of Maine, son David is at Franklin and Marshall, and daughter Deborah is in high school, and that they will all be skiing at Mad River in February. . . . **Roderic Smith** also has a son David attending college. This David is on his way to a medical career. He has a sister Karen, 15. Dick Smith has been associated with NEMA for the last 10 to 12 years. He is currently head of their Consumer Products Division and executive

secretary. . . . **Bob Granberg** advises that his daughter, Christine, is getting married February 17 to Linden McClellan of Bowling Green, Ky. Best wishes to the happy couple. . . . **Howard Beck** has had a busy year at B.T.U. Engineering. He reports **Harold Oshry** is successfully recovering from his heart attack of last fall. . . . **Arthur W. Gilbart** has been elected a vice-president of Freeport Sulphur Company. . . . Once again I would like to repeat my invitation to wives to write in for your husbands.—**Allan Q. Mowatt**, Secretary, 11 Castle Road, Lexington 73, Mass.; Regional Secretaries: **Edward C. Edgar**, Kerry Lane, Chappaqua, N.Y.; **Hal L. Bemis**, 510 Avonwood Road, Haverford, Pa.; **Elmer D. Szantay**, 6130 North Kilbourn Avenue, Chicago 16, Ill.; and **Gerald C. Rich**, 673 Rosita Avenue, Los Altos, Calif.

## '36

This month's mailbag contains the usual collection of address changes, which one would expect from a group really "on the move." **Kenneth Rees** has moved from Baton Rouge to Esso Raffeneriet Norge in Tunsberg, Norway; **Dr. W. Kelly Woods** from San Jose, Calif., to Richland, Wash.; and **Seth Nickerson** from Hyannis to Watertown, Mass. I have not included those which seem to be merely a change of residence without giving indication of change of position or new responsibilities. . . . **Robert B. Woodward**, Donner Professor of Science at Harvard, has been awarded the first Pope Pius XI Gold Medal established by Pope John to honor men of science under 45 years of age. Bob has won world-wide renown for his synthesis of, to name a few, quinine, cortisone, cholesterol, strychnine, and reserpine. . . . **William P. Kennedy**, who received his master's degree with us, had an article in the December, 1961, issue of Aerospace Engineering entitled "Short-Haul Air Transportation." In it he discusses adaptation of airport and terminal facilities, particularly in large cities, so that maximum benefits can be realized from use of VTOL machines. (My 19-year-old son had to tell me what VTOL meant.) The author is currently assistant director of market research at Lockheed. . . . **Semon E. Knudsen** has moved from the position of general manager at Pontiac to that of general manager of the Chevrolet division of General Motors. The new general manager says that his influence will not really be felt until the 1964 models are ready! . . . In November, **Fred Prah**, 3d, son of our **Fred, Jr.** and a senior at the Institute, joined with Winthrop Smith, a graduate student, in presenting an organ recital at the M.I.T. Chapel, under the sponsorship of the Department of Humanities. Fred's share of the program included works by Buxtehude, Pachelbel, and Bach.

**Henry F. Lippitt**, 2d, formerly Deputy General Counsel, Metropolitan Water District of Southern California, announces the opening of an office for consulting and legal practice, specializing in oil, gas and water law and public utility

regulatory problems at 611 Wilshire Boulevard, Los Angeles 17, on January 1, 1962." From April 1957 to last spring, Hank was with the Southern California Gas Company, as attorney. Before moving to the Metropolitan Water District, he took off for what seems to me to have been the trip of a lifetime—to Africa. In his news letter, Hank reports that "without doubt, the highlights were the long auto trips: Entebbe to Nairobi, Livingstone to Mombasa, and Entebbe to Murchison Falls, as well as those around Johannesburg and Capetown, all of which gave the greatest flavor and provided the most vivid recollections. Seeing Kenya's lovely highlands, its Royal Game Parks, and the coral reefs of the Indian Ocean made a lasting impression. Tanganyika, with its Serengeti plains, the lions, rhinos, and elephants at Lake Manyara and Ngorongoro Crater, was unforgettable. In Rhodesia, the highlight was a visit with friends, topped by a trip to the newly-constructed Kariba Dam which backs up a lake 200 miles long. In Johannesburg we visited a gold mine. Capetown, a breath-taking combination of the best in San Francisco and Honolulu, makes one realize that, whatever the political situation may be, 'it couldn't happen to a lovelier land.'" Hank wrote a series of articles for the Los Angeles Examiner and has had printed an article entitled "Murchison Falls, Today's Journey Into 'Darkest' Africa;" this latter describes part of his trip. Unfortunately the article was rejected by the New Yorker so if you want to read it you can probably obtain a copy from Hank himself at 321 South Mariposa Avenue, Los Angeles 5, or your secretary will let you borrow the copy she has for the record.—**Alice H. Kimball**, Secretary, 20 Everett Avenue, Winchester, Mass.

## '37

Your 25th Reunion Committee is meeting regularly, and from all indications we are going to have the best reunion in all respects: attendance, a class book you will treasure, and a program you will enjoy. You have just recently received another mailing and you can help the progress of your committee by filling out the class questionnaire and confidential card questionnaire and forwarding it to **Len Seder**, 267 Hawthorne Street, Malden, Mass. Len is patiently waiting for this data so that he can compile, analyze and write an article on how we compare to 5, 10, 15 and 20 years out. If you haven't sent in your class book data, including photo, by now, then you are very near to becoming part of the problem instead of helping solve the problem. Everyone who sends in his information will receive a free copy of our class reunion book.

**Art York** has been appointed director of public relations for United States Rubber Company. Art joined U. S. Rubber's synthetic rubber division in 1942. After serving with the Office of Rubber Reserve in Washington from 1944-46, he returned to U. S. Rubber and became assistant public relations director in 1952.



... **Herb Weiss**, Manager of the Military Systems Planning and Operations Research Department, Technical Staff, has recently written an article on "Long Range Planning for Space Defense" which appeared in "Aerospace Management." ... **Frank Kowalski** has entered the race for the Democratic Party's 1962 U. S. Senate nomination in Connecticut. ... **Bill Bergen**, President of the Martin Division, Martin Marietta Corporation has been honored by the Baltimore Chapter of the Society for the Advancement of Management. Bill is the first man to rise through the ranks of the Martin Company to the post of president—**Robert H. Thorson**, Secretary, 506 Riverside Avenue, Medford, Mass.; Professor **S. Curtis Powell**, Assistant Secretary, Room 5-323 M.I.T., Cambridge, Mass.; **Jerome Salny**, Assistant Secretary, Egbert Hill, Morristown, N. J.

# '38

It is so rarely that I receive a letter from one of the class that **Tenney Clough** will excuse me for quoting extensively from one he sent recently. "Greetings from New England! How are you enjoying the 'golden West'? I almost called you just before Thanksgiving as I was out in the Los Angeles area. But it was a very hurried trip with just about enough spare time to eat and sleep. I will promise to do so next time though. We are rusticated in Amherst still. The boys, now 10 and 14, are full of pep and problems, and my folks have moved nearby in Milford. Our major endeavors seem to be the perpetual upkeep on a 100-year-old house and a cottage on Lake Winnisquam acquired two years ago. Alan, our older boy, is showing me the finer points of both water and snow skiing now, but I can still trounce him at tennis. Dusty is just beginning to take to those sports in earnest. And Cele has her hands full keeping us fed and scrubbed."

We have news of the death of **Francis T. Akin** in Manchester, Conn. Francis was a lieutenant commander of the Manchester Power Squadron and an industrial engineer at Pratt and Whitney Aircraft. ... A news release informs us that **John F. Snuggs** has been appointed to the position of chief engineer at American Oil Company's General Engineering Department at Whiting, Ind. He will be in charge of a process design group in the newly created process engineering division of General Engineering. The group will handle process design problems associated with commercial refining units at all twelve company refineries. ... **Dick Young**, who as you know, is president of Acushnet Process Company in New Bedford, Mass., was recently re-elected a director of the Associated Industries of Massachusetts.

In a book of three addresses given in Santa Barbara, Calif., in June 1959, before the Interdisciplinary Conference on Atmospheric Pollution, is an address entitled "Sources of Community Air Pollution" by **Gus Rossano** of the U. S. Health Service. Gus is also affiliated with the Cal-

ifornia Institute of Technology. ... **Dick Muther** has recently completed a book entitled "Systematic Layout Planning." Dick has his own consulting firm in Kansas City, from which point he serves clients throughout this country, Canada, and overseas; his latest consulting work is in Japan. This is Dick's third book. His previous books include "Production Line Technique" and "Practical Plant Layout," and all of them have been translated into at least one foreign language. —**David E. Acker**, Secretary, Arthur D. Little, Inc., 1424 Fourth Street, Santa Monica, Calif.

# '39

From **Gordon E. Holbrook**, II, comes word that his brother-in-law and our classmate **Albert W. Gabriel, Jr.** XIII, passed away suddenly last summer following a brief illness. Al had been working for General Electric's Space Systems Division, in Philadelphia. His widow, Liz, and three teenaged children are living at 110 Pine Tree Road, Radnor, Pa. ... Gordon's own news is that he has been with the Allison Division of General Motors since 1946, and he is now chief engineer of the Aircraft Engine Operations. His group is developing and producing aircraft turbo prop and turbo jet engines, propellers, actuators, ram air driven accessories, rocket motor cases, and many classified devices for the space age. Gordon and Elizabeth have two fine teenaged boys "who, bless them, will never be engineers." ... **Harry Wexler**, XVI, Director of Meteorological Research for the United States Weather Bureau, broke into the news again via a news story in the Christian Science Monitor of January 10, 1962. Dr. Wexler addressed a meeting of the Boston Section of the American Meteorological Society, and predicted that mankind's entry into space may have some unexpected side effects on earthly weather. It is possible that exhaust from large rockets using "exotic" fuels could seriously contaminate the high regions of the atmosphere; in turn, this contamination conceivably could influence weather near the surface in a manner quite out of proportion to the small amounts of material such rockets might introduce.

A Christmas letter from **Manning C. Morrill**, X, indicates that he has recently been promoted to executive vice-president of the Cryovac Division of W. R. Grace and Company. Along with that good news, came word that the Cryovac headquarters is to be relocated from Cambridge, Mass., to a spot midway between Greenville and Spartanburg, S.C., sometime in the summer of 1962. For the Morrills, it was a hard decision to make; they had enjoyed their adopted home town of Winchester, Mass. Manning and Connie's four children now stand as follows: Patricia, 15; Allison, 13; Judith, 11; and Manning, 10. Also gleaned from Manny's letter (written by Connie, obviously) is that after spending a vacation at the Seignior Club in Quebec, Manny has become a pro at the cha-cha-cha, and is

now working on the tango. I suppose by now, Manny, you're an expert at the newest dance rage, the Twist! ... If space permitted, I'd like to print a wonderful letter from Genie and **Frederick A. F. Cooke**, XV. Here are some of the salient points, however. Fred, a Navy career officer with the rank of captain, serves as "Force Civil Engineer on the Staff of Commander Naval Forces Japan, and Officer in Charge of Construction." His official address is "Officer in Charge of Construction, BuDocks Contracts, Far East, Navy 3923, FPO, San Francisco, Calif." Fred says in a postscript: "I'm finding my job out here in Japan so interesting I hope the Navy Department loses my card and leaves me here. I have numerous construction projects to oversee and a small but capable staff to help me do it. Also participate actively in all of the Navy's planning for new facilities, and deal extensively with the government of Japan on real estate matters. I find the Japanese a fine group of people with whom to do business. The language barrier creates interesting problems at times, but once the message is received, the action is generally prompt and effective."

Along with the Cooke's letter came a Christmas card, showing the whole family dressed in Japanese costume. And Fred made this comment: "A close look will reveal that Eugenia has a reasonably authentic oriental look. As a matter of fact, several geishas have made tactful inquiries about her antecedents, and a few months ago she was stopped by an American in Tokyo and asked, 'Pardon me, but do you by any chance speak English?'" ... I haven't reminded '39ers for long time to send along news of themselves and other classmates, but now is the time, if you desire to let this column continue! I'll provide the editing and typing, but you've got to make with the news!—**Oswald Stewart**, Secretary, 31 Birch Road, Darien, Conn.

# '40

Among the many advantages of the Christmas season is the tendency of classmates to write notes and letters of their activities during the past year. From **Beano Goodwin** comes the following: "**Bill Stone** and I have been coaching the local high school wrestling team which we got started this year. We are winning about one-quarter to one-third of the matches, but no meets. All of the other schools have been at it for a while—but it's lots of fun. So far I've been the only casualty—a sprained knee. Unfortunately, we have no tigers so we have to try to teach them, which isn't very easy. This softness of present youth is for real, as the number of kids who will even come out for a sport is now very low. Only 17 showed up for 12 spots in a school of 500. But we have hopes as the kids are beginning to get interested and I think that I'm finally convincing them that their chances of winning double if they try to maim their opponents a little." ... **Sam Omansky** writes: "We are still doing



business at the old stand and I remain as technical director of the Grand Union Company. Our daughter, Suzanne, is now a freshman at Douglass College (Rutgers U.), and son Michael is in the local fourth grade. I don't see many of the old M.I.T. gang any more—**Sam Goldblith** about once a year and **Russ Werby** maybe twice a year. And that's about all."

One of the highlights of the Christmas mail is the annual letter from **Ray** and **Virginia Keyes**: "Dear Friends: Many of us work zealously daily to develop weapons of great power and devastation. In our spare time we work equally zealously to construct our fallout shelters to save ourselves from weapons like those we are creating. We seem to labor at cross purposes. But do we any more than the ancient fighter—sword in one hand—shield in the other; or the more modern soldier, advancing in the day, gun and bayonet ready—and at night feverishly digging a foxhole wherein he will sleep. Twenty centuries past, a man brought a strange message to a confused multitude. The message was 'Brothers, love one another!' Can we not continue to say after 2000 years that that message still needs the telling, the hearing and the doing?"

"This year finds us finally with our home addition completed. The third bedroom, the second bathroom and the family room are all valuable assets contributing to greater harmony among the children and greater peace to weary parents. We recently acquired (good word—it is not paid for yet) a piano (Kristin calls it 'pinano'). Courtney, the budding pianist, shows promise of an early blooming. He will accompany our carol singing this year. Our Court is a busy cub scout and his father is now an assistant cubmaster, back in scouting after six years' retirement. For those who remember Tim's missing front tooth, after three years' wait the new tooth is finally entering. Now he will be able to whistle. For a change this lad likes school. In fact, he is so scholarly that he recently wrote an encyclopedia. Greg entered the hallowed halls this year. In response to the question, 'Is your teacher good?' he replied, 'I don't know if she is, but she is good to me.' He shows promise of being a scholar and more. He has already written two books, one on aircraft and one on animals. He also has been working on an encyclopedia. Court and a friend built a hot rod, and in the process of giving it a uniform coloring with black tar, he so colored himself that his clothing had to be discarded. We were about to discard him, but with cleaning fluid we found he could be salvaged. The vehicle is really an interesting creation. The wheel spread is so great it has to be tipped to get through the gates. Since her brothers all attended school, Kristin thought that she should too. She has her good time at the local play school. She sings many popular children's songs with tunes of her own making and when she accompanies herself on the 'pinano,' it is a unique and amusing rendition. I am sure you would enjoy it as we do. It has been a good year for us. We had no really disabling illnesses or injuries, although Court had a shinier couple of weeks ago. We attribute our

good health to consuming more vitamin pills than food. Ray thinks that vitamins give the greatest lift since Lydia Pinkham's elixir. If this greeting reaches you in time, we hope you have a Merry Christmas. If it does not, we hope you had a Merry Christmas. Whichever way, we wish you to be of stout heart in '62."

Ray penned an addition to the above as follows: "We ran out of letters last year, and I resolved to write you a little more of my professional experiences. Since 1955, I have been at the Lawrence Radiation Lab, Livermore, Calif. First I designed fast-rotating mirrors. The last one I did was designed to go 33,000 R.P.S. (and by 'S', I mean second). Later I went to another project and designed a water-cooled nozzle, which I am glad was never used. From what I have learned since, it would have probably burned up. Later I worked for the Sherwood Project, engineering some pretty fancy hardware. For the last two years I have been working on the higher priority items that the Lab develops. My work is in advanced applied mechanics. Problems in elastic stability and shell theory occur fairly regularly. This job is a good part of my past M.I.T. education. It is and has been interesting work and I really enjoy it."

In answer to my inquiry in regard to the closing out of the reunion funds, **Bob Bittenbender** wrote: "As for news, I am just completing my 10th year at Arthur D. Little Inc. A small company when I started, it now numbers about 1,500 people. My wife, Sal, and I keep busy with community affairs in Lexington. Our daughter, Sandy, is a freshman at Jackson College in Tufts University. Her ambition is to teach the old man to 'twist.' Our son, Bob, is a sophomore at Lexington High School and he is eating us out of house and home. Sorry this note is too late for the January issue of *The Review*, but we all appreciate the faithful effort you've put in over the years." . . . **Dick Robertson** closed out the reunion account by sending me a check for \$279.52. This covered the \$200 borrowed from the treasury for the 20th Reunion, a \$74.72 profit on the 20th Reunion, and also a \$31 profit from the 15th Reunion. The Class bank account now stands at \$1,348.25. In making our Class Gift at our 25th Reunion, a good portion of this money can probably be included as part of the gift.

**Merlin De Guire** has been promoted to the rank of brigadier general in the U.S. Army. Merlin at present is in Orleans, France. . . . **Sam Rabinowitz** has been named chairman of the board of Colonial Provision Company, New England's largest meat packer. . . . The deeds of **Edmond Di Giannantonio** while aboard the U.S.S. Vincennes in the Savo Bay battle on August 9, 1942, have been recorded in the best seller by Richard Newcomb "Savo—The Incredible Naval Debacle off Guadalcanal." . . . **Theodore Gunaris** has been made chief supervisor of Special Services by the registrar of motor vehicles in Boston. . . . **Massimo Baer** was guest speaker at a dinner meeting of the Springfield, Mass., chapter of Unico last November. Massimo works for Monsanto

and is one of four scientists in the Springfield Plastics Division who holds the title of "Scientist" in recognition of the outstanding work that he has done in the plastics field. . . . **Lester Lees** is chairman of the Aerodynamics and Fluid Mechanics panel of "Aerospace Engineering" magazine. . . . And so the column goes from famine to feast. Let us hope that it does not come full circle but that contributions continue to pour in.—**Alvin Gutttag**, Secretary, Cushman, Darby and Cushman, American Security Building, Washington 5, D.C.; **Samuel A. Goldblith**, Assistant Secretary, Department of Food Technology, M.I.T., Cambridge, Mass.

## '42

Our meteorologists have continued their studies and publications on weather phenomena. **Pauline Austin** presented two papers at the Ninth Weather Radar Conference, "Investigations Concerning the Internal Structure of New England Squall Lines" and "Some Observations of Attenuation of 3.2 cm. Radiation by Heavy Rain." Lieutenant Colonel **James C. Sadler**, at the A.M.S. Program on Tropical Meteorology, presented "The Cold Trough of the Tropical Upper-Troposphere." While we cannot call on our astute research people to produce clear warm weather for our reunion, we do hope that their forecasts will tell us whether to bring beach or rain gear, or both. . . . In the annual report of Arthur D. Little, Inc., two items of unusual interest about **Edward L. Pepper**'s work appeared. At the request of the government of Pakistan, Ed and four colleagues surveyed the industrial potential of East Pakistan. They found it practical to produce rayon, jute, paper and steel (based on local scrap). In another study, "Magnesium—For Norsk Hydro-Elektrisk Kvaelfo-faktieselskab," Ed and three colleagues analyzed world-wide demand and supply, price trends and competitive influences bearing on magnesium markets. . . . **Charles B. Smith**, assistant to the chief scientist and vice-president of United Aircraft Corporation, published an article in *Aerospace Engineering* entitled, "Propulsion System for Laminar Flow Aircraft." In addition to his S.B. from Tech he has an M.S. in mathematics from the University of Connecticut (1947). Charles joined United Aircraft Research Labs in 1943, went to the Hamilton Standard Division in 1950 to work on supersonic propellers, and in 1955 went to the Pratt and Whitney Division to direct the work on LOX-hydrogen rockets. In that same year he joined the faculty of Rensselaer Polytechnic Institute, Hartford Graduate Center, as adjunct associate professor of aeronautical engineering.

**Charles H. Smith, Jr.**, President of the Steel Improvement and Forge Company of Cleveland, has been appointed national chairman of the Defiance College Advancement Fund. The Ohio college is seeking \$1,000,000 for new campus buildings. In addition to his many other civic

posts, Charles is a member of the Board of Trustees of Defiance College and is a corporate member of the Fenn College Corporation. The Continental News Review also reports that he is a director of corporations in Brazil, Argentina, India and England. . . . The Vermont fish and game commissioner has appointed **Robert Candy** state conservation publicist. Bob has been an insurance office manager, free-lance illustrator and writer, working for advertising, magazines, the movie industry, and book publishers, and is the author of three books on nature and the out-of-doors. During World War II he served four years as a B-25 pilot. Since that time he has been associated with conservation, Y.M.C.A., the Boy Scouts and town management in New Hampshire and Vermont. . . . The year end's collection of greeting cards contained many interesting ones for which we send our thanks, but the most unusual one showed the four **Rosetts** in deep diving dress. Mixa, their dachshund, quietly minds the family treasure while **Ken**, **Jean**, **Nancy** and **John** are off under water. Ken is organizing an enthusiastic midwest contingent for our reunion at the Mayflower Hotel in Plymouth, Mass., on Friday, June 8 through Sunday, June 10.

A note from Montreal tells us that **Harry H. Schwartz** is president of Electrodesign, Ltd., a lecturer at Sir George Williams University and at Laval Technical Institute, a writer for Electrical Contracting and Maintenance magazine, and chairman of the Montreal section of the I.R.E. . . . A release from Esso Research and Engineering Company reports that **Dr. Zigmond W. Wilchinsky** has been appointed a research associate. He received his doctorate with us and has been with Esso's Chemical Research Division as a senior physicist. Zigmond's work in Baton Rouge, La., and in Linden, N.J., has been in catalysis research, adsorption with molecular sieves, and the structure and characterization of polymers. He is a member of the A.C.S., A.P.S., the American Crystallographic Association and the A.A.A.S. . . . One of the longest distance moves on record for our class was made by **S. Edward Yoder** from 95 degrees West Longitude to 75 degrees East; Union Carbide in Galveston, Texas, to Baitul Surur, 61 I. Warden Road, Bombay 26, India. Other shorter moves were made by **Thomas T. Crowley** to Sewickley, Pa.; **Wesley R. Floyd** to Hanover, N.H.; **Dr. Robert T. Olsen** to Long Valley, N.J.; **Richard E. Russell** to Malvern, Pa.; and **Colonel Charles B. Winkle** to San Antonio, Texas. . . . Best wishes for an early dry spring for golf and gardening from your secretaries east, west, north and south.—**Lou Rosenblum**, Secretary, 24 Cedar Road, Belmont, 78, Mass.; Co-Secretaries: **Bob Keating**, **Ed Edmunds**, **J. J. Quinn**.

# '43

**Bill Laird** has been named Westinghouse professor of mechanical engineering at the University of Pittsburgh's School of Engineering and Mines. Dr.

**Laird** became an assistant professor of mathematics at Pitt in 1956 and was named an associate professor of mechanical engineering there in 1959. In addition to teaching at Pitt, he co-ordinates graduate studies in the mechanical engineering department and is a civilian director of civil defense communications in Allegheny County. A World War II veteran, **Bill** received his master of science degree in mechanical engineering from Carnegie Institute of Technology after the war and his doctor's degree in mathematics from Pitt. . . . Among those receiving awards for progress in arc welding design sponsored by the James F. Lincoln Arc Welding Foundation of Cleveland, Ohio, was classmate **Kendall H. Spencer**, Chief Engineer of the Blanchard Machine Company of Cambridge, Mass. His award was based on an elephant grinding wheel. . . . **George C. Marakas** has been appointed to the post of Eastern Zone Manager for the R. K. LeBlond Machine Tool Company, of Cincinnati, Ohio. George will head up a territory which includes Delaware, eastern Pennsylvania, New Jersey, the southern tier of New York state and the greater New York City area. He will supervise LeBlond sales engineering groups with headquarters in New York City and Philadelphia and will also represent Fosdick Machine Tool Company, of Cincinnati, in the Philadelphia area. Fosdick is a LeBlond subsidiary. A recent addition to the LeBlond sales force, George was for the past eight years sales manager of the King and Elmes Division of American Steel Foundries. Still a bachelor, George makes his home in Cincinnati at 7087 Glenmeadow Lane, Roselawn. . . . In the August, 1961, issue of Aerospace Engineering there appears an article entitled "XV-3 Low-Disc-Loading V/STOL Aircraft Flight Test Experience" by C. E. Davis and classmate **Bob Lichten**. "Development of a V/TOL type craft with inherently good flight and operational characteristics in the critical hover, low speed and transition flight conditions is detailed. It is believed that a fixed-wing, low-disc-loading V/TOL configuration offers an optimum combination of operational and performance characteristics over the entire flight spectrum." Bob is chief experimental project engineer at Bell Aircraft. After a private venture in the development of a new type of V/TOL aircraft in 1946 and 1947, he joined Bell in 1948, serving as project engineer on the Navy HTL-3 and the Army XV-3. His present area of responsibility covers preliminary design, research, aerodynamics, dynamics, computing and experimental aircraft projects. The latter have included all initial development versions of the XF-13F, the first U.S. turbine-powered helicopter to enter production. Author of numerous technical papers on helicopter and V/TOL aircraft designs, he received the Klemin Award, highest honor bestowed by the American Helicopter Society, in 1959. He is currently a member of the NASA Committee on Aircraft Aerodynamics, and the IAS Aerospace Technology Panel for Vehicle Design, and is a private pilot with helicopter and light aeroplane ratings.

**Ben Parran**, of Stockbridge, Mass., is manager of the Polaris program at General Electric's ordnance department in Pittsfield, Mass. He was a recent speaker at many different affairs in the Pittsfield area on the subject of the Polaris program. . . . **John J. Hess, Jr.**, passed away on January 26, 1961, following a short illness. He had achieved a prominent position in the instrumentation field and was engineering department head for air traffic control at Sperry Gyroscope Company. He is survived by his wife, Joan, and four children of Garden City, Long Island, New York. A fund was established at Sperry to help educate his children. The class extended its sympathies to his family.

Change of address notices find **Bill Verrochi** living in P.O. Box 355, R.D. No. 5, Johnstown, Pa.; **Jim Holt** moving from New Jersey to Fort Logan, Colo.; **Maurice R. Evans** in Halifax, Nova Scotia; **Colonel Elmer T. Dorsey** now in Orlando, Fla.; **Eduardo F. Herrerias** in Guatemala, Guatemala; **Jim Libby** in West Vancouver, B.C., Canada; **John C. Stetson** moving from Winnetka, Ill., to the Huntington Hotel, Pasadena, Calif.; and **John A. Thoele, Jr.**, moving to Brookville, Glenhead, N.Y.—**Richard M. Feingold**, Secretary, 10 North Main Street, West Hartford 7, Conn.; Assistant Secretaries: **Christian J. Matthew**, Arthur D. Little, Inc., 314 Battery Street, San Francisco, Calif.; **John W. McDonough, Jr.**, Meissner Engineers, 300 West Washington, Chicago, Ill.

# 2-'44

The plea made a couple of months ago for more news has really started to pay off. What with a number of notes that came in directly, and some of the outpourings of the publicity releases, it seems as though there is a lot of news this month. . . . Had a visit from **Sam Morrison**, XIII, who is in the Design Department of Electric Boat in Groton, Conn. Sam and Betty were visiting various relatives in Fairfield County with their children and stopped in to see the **Heilmans** for a short while. Sam reports that he sees **Bob McCandless**, XIII, who started with us, and then moved to class of '47. Bob is chief naval architect at Electric Boat, and lives in Old Lyme, Conn. Sam has also seen a good deal of **George Letz**, XIII, who is in design liaison engineering, which Sam tells me is connected with the production department of Electric Boat. While here, Sam and Betty were discussing the merits of their 27-foot sloop that seems to take up much too much time in terms of keeping it going, or at least that is what Betty reports! . . . A note from **Jay Martin**, II, who is director of supporting services at Arthur D. Little in Cambridge, indicates that he and Tink have had a quite active year. He is active as chairman of the Greater Boston Coordinating Association, Boy Scouts of America, has just passed his final exam in the basic piloting of small boats of the Power Squadrons, built a tent house at their summer camp in New Hampshire, and



did some painting during the year.

A note from **Warren Howard, II**, district manager of Morgan Construction Company in Pittsburgh advises that in addition to selling, he is vice-president of the M.I.T. Club of Pittsburgh, and an educational counselor for the Institute. Warren plans a vacation trip out to Colorado this coming summer, also he advises that he likes Pittsburgh very much, and that it is a very active business community. . . . A very short note from Emily and **Bill Rodeman, VI**, indicates that he is still in London consulting on some sort of communications problem for the electronics industry in England. . . . A clipping from the Staten Island Advance, indicates that **Ken Nelson, XV**, President and founder of Methods Research Corporation, has just moved into a new plant manufacturing magnetic control boards. The paper indicates that the board is a steel panel on which magnetic markers are placed which enables it to be used for many purposes. It sounds like quite a gadget, and any one of you who wants to contact Ken, don't forget to mention this magazine!

A note published in the Louisville, Ky., Times advises that **Cal Taft, II**, has been made manager of the Louisville plant of American Radiator and Standard Sanitary Corporation. Cal has moved from the same spot at the company's Cincinnati plant. . . . A news release from Bendix Corporation in Mishawaka, Ind., indicates that **Dick Whiffen, VI**, has been promoted to the position of general manager of Bendix Products, Aircraft Division. The information is a bit vague as to whether Dick is moving from Mishawaka to South Bend or not. . . . A very nice note from **Lang Flowers** indicates that he would be interested in helping 2-44 and 10-44 get together as one class. If you will recall, I wrote a good deal on this last year, but it seems as though the interest has been lost recently. I am still of the opinion that it is a good idea, and will welcome comments from you fellows.—**Paul M. Heilman**, Secretary, Reflectone Electronics, Inc., West Main Street, Stamford, Conn.

## '45

Each December brings about a modest thaw in the response or activities of our class; this year has been no exception so here we go! Yes, your secretary thanks those that have "sprung" for Springer. . . . **Dwight Collmus** called from Frederick, Md., one early December day to report on his activities. After several years with the Army Engineers at Camp Detrick in Frederick, Dwight joined Alexander Brown and Sons, Baltimore investment bankers, in the mid-1950s. Once the usual training period was completed, Dwight opened an office in Frederick where he has a six-minute walk to work. When I heard about the long commutation I turned green for we had had a 45-minute delay on the New Haven that particular morning! The Collmus' have a well-planned four-child family—girl, boy, girl, boy! Dwight will attend our 20th Reunion; in the meantime should you

need a good stockbroker, well. . . . **Chick Street**, our ex-class president still has his racing senses, for Chick and his 31-foot sloop, Sara Ann II, won the Cruising Class Trophy up, or is it down, in Narragansett Bay. The ship is named after Chick's and Helen-Marie's two daughters.

**Dave Trageser** recently forwarded a Computer Center Newsletter prepared by **Romeo R. Favrea**, Vice-President, Research and Computation, Electronic Associates, Inc. of Long Branch, N.J. Electronic Associates operate computation centers in Princeton, Los Angeles and Brussels, Belgium. Romeo welcomes analog and hybrid computer problems. . . . **Lloyd H. Turoff** continues as president of the Rhode Island chapter of the American Institute of Architects; Lloyd is also secretary of the State Board of Registration and Examination of Architects. . . . Commander **Max A. Eaton** is the Commanding Officer of the Fleet Weather Facility, Miami, Fla. . . . **George M. Armstrong, Jr.** has journeyed north to Manhattan with American Cyanamid at Rockefeller Center. Since George lives up in New Canaan, Conn., a neighboring town, we hope to see him in the near future.

Christmas cards often contain interesting notes and comments. **George Bickford's** card was no exception! In fact, we shall quote it verbatim: "Much news for your gossip column! 1) Received master's in business from Syracuse University; 2) teaching engineering economics at Syracuse nights; 3) special assistant to manufacturing manager (Carrier Corporation); 4) new home; 5) operating manager of only privately owned ski club with T-bar left in country; 6) own new TV; 7) drive Volkswagen to work plus station wagon plus dog (how curly drives two cars and a dog to work is beyond your secretary's comprehension but this is what the man said); 8) am soliciting for S.C.F.; 9) trustee of church; 10) sing in choir; 11) have an ulcer—how's my status?" In answer to your question, George, about all I can say is "Wow!" I should add that George has a very charming wife and three wonderful children. . . . Although I was out of town when **Jerry** and **Lib Patterson** were in New York in September, I did have a chance to share some Christmas cheer in mid-December when Pat was down for a refresher course put on by the A.S.M.E. at the Hotel Roosevelt. . . . **Vince** and **Bobbie Butler** enclosed a cute snapshot of Diane and Lynn at Christmas. Vince reported that he had seen **Pete** and **Lou Hickey** in October while he was in Washington for two weeks' active duty at the Navy's Bureau of Weapons—formerly the BuOrd to you ex-V-12ers. Since the Butlers are expecting a third child in March, we will all agree with Vince's comment that he is doing well for a late start! **Lou Hickey** reports the following: "If we had any news we'd write pages! Life goes on very busily—children thrive, we exist and try to oversee their dozens of activities. Spent four good weeks at the Cape in August. Pete travels some, but I never get to go!" I am fearful that Lou has aptly summarized the sentiments of

many wives! . . . That gay blade bachelor, **Arthur Schwartz**, Secretary of 1947 has bitten the dust! The Schwartz Christmas Card signed Margie and Arthur contained the added comment "Enuf said!" Christmas cards without notes or comments were received from **Lib** and **Jerry Patterson**, **Elaine** and **Bill Shuman**, **Betty** and **Bill McKay**, **Rosemary** and **Nick Mumford**, **Lois** and **Buzz Busby**, **Normal** and **Bud Hetrick**, **Jimmie** and **Tom Stephenson**, **Trudy** and **Max Ruehrmund**, **Mary** and **Dave Trageser**, **Helen-Marie** and **Chick Street** as well as several other Tech grads.

The Alumni Association Directory for '61-'62 lists the following 45'ers as active in Alumni affairs. Alumni Council: **Bill McKay**, **Dave Flood**, **Dave Trageser** and **Jerry Quinnan**; Club Officers: **Bill MacKenzie**, Treasurer, Lehigh Valley; **Clint Springer**, Vice-President, Fairfield, Conn.; **Edward Oxenford**, Secretary-Treasurer, Buenos Aires; **Mario Wunderlich**, President, Guatemala; **Howard Edwards**, Secretary-Treasurer, Louisville, Ky.; **Ed Stoltz**, President, Pittsburgh; **Bill Humphreys**, Treasurer, Pittsburgh; Educational Council: **Jim Hoaglund**, Phoenix, Ariz.; **Vince Butler**, San Francisco; **Dave Flood**, Natick, Mass.; **Warren Miller**, Buffalo, N.Y.; **Ed Stoltz**, Pittsburgh; **Curt Beck**, Amarillo, Texas; **Gardner Brown**, Cedar City, Utah; **Kirk Drumheller**, Richmond, Wash. . . . As of December 1 the following 45'ers were listed as S.C.F. committeemen in greater New York: **Chris Boland**, **Dave Cohen**, **Guy Gilleland**, **Sandy Harwood**, **Tom Hewson**, **Tom Hood**, **Hart Kircher**, **Jim Levitan**, **Sandy Neuhaus**, **Hap Poole**, **Bob Roth**, **Clint Springer**, **Hal Thorkilsen**. See you all after the spring thaw. Let's spring for Springer.—**C. H. Springer**, Secretary, Firemen's Mutual Insurance Company, 420 Lexington Avenue, New York 17, N.Y.

## '46

We are now all settled in our new home at the address below and hope anyone who visits the twin cities area will be sure to call us on the phone and come out for a free meal. **Fred Fuller** has also recently moved. His new address is 377 May Street, Elmhurst, Ill. Along with the new address went a new job as sales manager for Packard Instrument Company, La Grange, Ill. . . . **Jose M. Bosch Aymerich** writes from his home at Paseo de Gracia, 30, Barcelona (7), Spain, to inform us of his recent activities. He is president of his own architectural, engineering and management firm in Barcelona and Madrid. His firm has been active in designing, constructing and maintaining Spanish-American bases in Spain; he is also building a skyscraper in Barcelona and a large hospital in Madrid. His skyscraper design has won a number of international architectural awards. . . . **Don Burke** is also a practicing architect. He makes his home at 1818 Caesar Way South, St. Petersburg, Fla. He is owner of Designers in Production, a firm engaged in engineering and design work in



the architectural and construction fields. . . . **Guillermo Machado Mendoza** is professor of production and industrial management at Catholic University in Caracas, Venezuela. He is married, has four daughters, and lives at Calle El Estanque, Country Club, Caracas. . . .

**Philip C. Freund**, whose permanent home address is Stockbridge School, Interlaken, RFD West Stockbridge, Mass., is temporarily serving as a science teacher at Teacher Training College, Ghana, West Africa. . . . **Walter Kaup**, who lives at 220 Jamaica Way, Jamaica Plain, Mass., has been named to the staff of Wellesley College where he will be a consulting psychiatrist. After M.I.T. Walter received his M.D. from Harvard. He has been on the staff of the Boston Veterans Administration Hospital, Massachusetts Memorial Hospital, and has also done a great amount of work with juvenile offenders. . . .

**Lloyd H. Perry**, who received his Ph.D. from M.I.T., was chairman of the Northeastern Section of the American Chemical Society last year. He has four children, lives at 32 Bertwell Road, Lexington, Mass., and is technical director of the U.B.S. Chemical Company of Cambridge.

**Jose M. Corbella** has recently been appointed vice-principal for the Faculty of Science of St. Xavier's College, Bombay 1, India. He is also professor of chemistry, and head of the Chemical Department. . . .

**Daniel D. Streeter, Jr.**, is an engineer in the metals allowables unit, structural development and research section of Aero-Space Division, Boeing, Seattle. Dan is married, has one daughter, and lives at 2243 Viewmont Way, Seattle 99, Wash. . . .

**Harold Jacobson** has stepped up the technical-management ladder at Raytheon and is now Systems Section Manager in the Navigation Systems Department. He received his S.B. and S.M. from M.I.T. and his M.B.A. from Boston University. He is married, has three boys, and lives at 43 Donna Road, Framingham, Mass. . . . **Robert C. Urquhart** is a missionary doing rural and industrial evangelism and bible institute teaching under the United Presbyterian Church in Taegu, Korea. Three years ago he spent a year's study furlough in Chicago. He took courses at McCormick Theological Seminary and Roosevelt University in the general field of the church and society, with special interest in the labor union movement. He did special research on the history of the labor union movement in Korea. . . .

**Abdul Jabbar Abdullah** has progressed a long way up the educational ladder. While working on his Sc.D., he was a research associate, instructor and then assistant professor of meteorology at M.I.T. He then became professor of physics and chairman of the Physics Department of Higher Teacher's College, Baghdad, followed by visiting research professor of meteorology at N.Y.U. He then became a member of the Founding Council, and in 1959 he became president of the University of Baghdad. He has written six books in Arabic on physics and meteorology, and is editor-in-chief of "Proceedings of Iraqi Scientific Societies." Abdul is married and has four children. Enough for now. Don't forget to pay your

taxes. Jackie needs the money.—**John A. Maynard**, Secretary, 25 Pheasant Lane, North Oaks, St. Paul 10, Minn.

## '47

The time is rapidly drawing nigh for the celebration of the 15th anniversary of our graduation from M.I.T. As of this writing, the chairmanship of the reunion is under the able leadership of **Parker Symmes**, who is being assisted by **Claude Brenner** and **George Katz**. Although the location of the reunion has not been definitely set, the date is absolutely certain—the weekend of June 8, 9 and 10. You will have received Claude Brenner's note requesting the remittance of the \$10 dues, which is quite desperately needed by the class treasury; your support is earnestly solicited. Future issues of The Technology Review, as well as direct mail pieces, will give you additional information of the reunion. In the meantime, mark the dates of June 8 through 11 as your 15th Alumni Reunion Weekend (June 11 is Alumni day at the Institute).

Concerning news of members of the class, I am pleased to report that **Art Galusha** has been appointed manager of the Northeast Regional technical liaison office of Litton Systems, Inc., a division of Litton Industries. Art was graduated in Course VI, was formerly manager of Navy product planning at the Raytheon Corporation, before becoming associated with Litton. . . .

**Dave Campbell**, Course I, has been promoted to the position of hydraulic engineer for the New England Electric Company, located in Boston; he will be responsible for hydraulic design and will also conduct studies and prepare cost estimates in hydraulic and related fields. Dave is married to the former Mary B. Fitzgerald and is the father of two children. . . .

**John W. Hunter**, Course II, has been assigned as application engineer in the Mobile Hydraulics Division of Vickers, Inc., Division of Sperry Rand Corporation; John will be located in Cleveland. . . .

**Ken Block** has been appointed to the board of directors of Littelfuse, Inc., of Des Plaines, Ill. Ken is presently a partner in the management consultant firm of A. T. Kearns and Company, located in Chicago; he graduated in Course XV. . . .

**John D. Bender** was appointed sales manager in charge of the Polaris support systems for the General Electric ordnance department in Pittsfield. After graduation from Tech, he taught engineering at Kansas State University, and was manager of service engineering for the Shawnee Manufacturing Company, before his position with General Electric. John is married to the former Mary Jane Wick of Tucson; they have three children. . . .

**Paul Moschella**, Course II, has been appointed chief of manufacturing planning for the United Aircraft Corporate Systems Center at Windsor Locks, Conn. He will be responsible for facilities and manufacturing planning and will also be chief of manufacturing liaison between the Systems Center and United Aircraft Corporation's divisions and other missiles and

space companies; he presently resides in Ellington, Conn., and is an adjunct professor of management at the Hartford Graduate Center of R.P.L. . . . **Allen N. Sweeny**, presently director of research and engineering of the DeVlieg Machine Company, was the speaker at the Springfield chapter of the American Society of Tool and Manufacturing Engineers in Springfield, Mass., at their November meeting.

Graduate members of the class have also been mentioned in recent releases. **Martin W. Essigmann**, who received his M.S. with our class, has been named dean of research at Northeastern University in Boston. . . . **Bertram J. Milleville** has been appointed manager of engineering for Chapman and the Swartwout Divisions of the Chapman Valve Manufacturing Company in Springfield, Mass. . . .

**Leonard B. Johnson** has been elected a vice-president of the Dunn Engineering Corporation of Cambridge, Mass. . . . **Donald R. F. Harleman** received an A.S.C.E. research prize at the Phoenix meeting of the A.S.C.E., and is presently associate professor of hydraulics at Tech. . . .

**William W. Caudill**, who received his master of architecture degree in the graduate school in 1947, was the commencement speaker at Berry College in Rome, Ga., last June. . . . **Arnold O. Putnam**, M.S. in Course XV, has been appointed vice-president and director of research at Rath and Strong, Inc., management consultants of Boston. . . .

**Daniel S. Maisel**, who earned his doctorate and master's degrees at Tech, has been named to a newly created staff position at Esso Research and Engineering Company in Linden, N. J. He has been appointed product manager for industrial chemicals.

**John T. Castles**, M.S., Course X, has been appointed general manager of the General Electric Company's chemical materials department in Pittsfield, Mass. . . .

**Dr. Merton P. Lamden** was awarded a senior visiting fellowship sponsored by the Organization for European Economic Cooperation in May, 1961. Dr. Lamden received his doctorate at Tech, where he was a teaching fellow in the department of biology and a research staff member in the Food Technology Laboratories. Subsequently he was a Hoffman-LaRoche fellow in the Department of Food Technology; at present he is an associate professor of biochemistry in the College of Medicine at the University of Vermont. . . . In case you didn't read the beginning of this article, let me stress again, that the reunion will be held June 8, 9 and 10 at a location somewhere in the neighborhood of Boston, and that the five year's dues of \$10.00 would be received with much appreciation, if you will send it in to Claude Brenner.—**Arthur Schwartz**, Secretary, 8355 Blackburn Avenue, Los Angeles 48, Calif.

## '48

Now that the Christmas holidays are over, let's take a look at the progress made by the members of our class. . . .

**Frederick W. Furland** of Bay City has been assigned the rank of full commander in the United States Navy. . . . Recently appointed manager of the industrial division of KLH Research and Development Corporation of Cambridge, Mass., is **Dr. Henry M. Morgan**. . . . **Dr. Armand V. Feigenbaum** has recently written a book entitled, "Quality Control—Principles, Practice and Administration." Dr. Feigenbaum has been manager of manufacturing operations and quality control for General Electric since 1956. . . . **B. W. Birmingham**, at the Boulder Laboratories of the National Bureau of Standards in Colorado, had an important part in the development of a miniature helium expansion turbine having gas-lubricated bearings.—**Richard H. Harris**, Secretary, 26 South Street, Grafton, Mass.; **Harry G. Jones**, Assistant Secretary, 94 Oregon Avenue, Bronxville 8, N.Y.; **Herbert Kindler**, Assistant Secretary, 128 Elatan Drive, Pittsburgh 16, Pa.; **Robert R. Mott**, Assistant Secretary, Box 113, Hebron, Maine.

## '49

Three of our classmates sent me letters at year's end, so this column is not completely the product of the Institute's news clippings. **Jack Fogarty** (S.B., M.S., Course 6A) and family (Peggy, Eric and Barbara) send from Philadelphia their regards, noting that they've had an excellent year and hoping that you have, too. Jack got his professional engineering registration from Pennsylvania last summer (he was registered in Massachusetts before), but as a department manager at Remington Rand Univac, he is doing less in engineering and more in management. This winter the company is sponsoring him in an evening course run by the Society for the Advancement of Management. Jack still does a fair (or unfair) amount of traveling. Usually trips are one or two-day junkets to New York, Chicago, St. Paul, Los Angeles, Washington, or Utica, but when he spent nearly a month in South Norwalk, Conn., last spring, the whole family "motelled" with him, a rather severe test of "togetherness." Besides Chestnut Hill Friends Meeting, which they attend regularly, they each have one outside activity: Jack is treasurer of the Erdenheim Civic Association and Peggy is on the board of directors of the little local library, doing publicity work for them. . . . **Donal Botway** (S.B., Course XV) writes: "I have left Avco Corporation's Lycoming Division and have joined Consolidated Diesel Electric Corporation as manager of Army sales for their Aircraft Equipment Division. In this new position, I will direct sales to the U. S. Army of the CONDEC line of special purpose vehicles for aircraft support, for transport, and for ordnance applications. I still live in Westport, Conn., with my wife and two daughters, aged 5 and 6. Other than that, there is not too much news."

From Mexico City, Hacienda (or Rancho) La Patera, **Charles W. (Carlos) Davis** (S.B., Course X) writes a nice let-

ter as follows: "I keep reading your contributions to The Review and wish to compliment you on your energy. **Stan Margolin** and wife were nice enough to contact us when they traveled to Mexico, and I had dinner with Dick Bolin, '50, of A.D.L., S.A., last week. Very pleasant fellow. **Gene Wroblewski** came to Mexico about three years ago, but hasn't been much of a correspondent since he married Lorraine. Art Fynsk, '50, did some work for Du Pont in Tampico, and **George** and **Edie Piness** gave us the pleasure of a few evenings with them on their trip to Mexico this spring. All my old army friends who took liberal arts are in science up to their necks while the engineering cronies are selling life insurance. I'm glad to see that a few stalwarts like you and Stan are carrying the load. Our office handles industrial insurance which involves traveling through Mexico quite a bit. I have just picked up an excellent book "The Plain Man's Guide to Wine" by Raymond Postgate (paperback). As soon as I can verify all the facts, I'll give you a definitive report. My boy (both children were adopted in Canada) is in the hero worship stage now, such as 'Daddy, why don't you go to school and learn to speak Spanish correctly?' Really builds up the old man. Madelaine and Nat (who will be 4 and 7 next January) are now in nursery school and first form at Greengates School. All four of us toured the Caribbean for 22 days during August and September on an air-conditioned Danish freighter leased to ALCOA. Since Captain Hertig of the 'Birgitte Skou' had his wife and two small boys on board, the trip was most enjoyable." With bitter cold and sweeping snows in season here, 22 days on the Caribbean sounds ideal.

We received from the clipping service a number of interesting items regarding the careers of our fellow classmates. **Charles M. Jordan** (S.B., Course II) has been elected a member of the M.I.T. Educational Council, one of 15 in the Detroit area. In the news release I discovered, much to my surprise, that Chuck is the chief designer of the Cadillac Studio at General Motors Styling, responsible for the interior and exterior styling of the Cadillac car. As many of you will remember, Chuck won the \$4,000 First National Award in the Fisher Body Craftsman's Guild model car competition as a sophomore at M.I.T. Since 1949 Chuck has worked for General Motors Styling, except for a period during the Korean War when he served in the Air Force at the Missile Center at Patrick Air Force Base, Fla.

News of **Dr. George N. Hatsopoulos** (S.B., M.S., M.E., Sc.D., Course II), currently associate professor in mechanical engineering, comes as a result of an article in the July 19 issue of "Aerospace Engineering." Dr. Hatsopoulos has directed several M.I.T. research projects in thermodynamics, thermionics, and magnetohydrodynamics. He is consultant to various engineering firms in the Boston area, chief engineer of Matrad Corporation, New York, and president of Thermo-Electron Engineering Corporation, Walham, Mass. In 1960, he received the Pi

Tau Sigma Gold Medal Award for Outstanding Achievements in the Field of Engineering for the years 1950-60. A member of Sigma Xi, A.S.E.E., and A.R.S., Dr. Hatsopoulos has published some 30 papers on thermodynamics, thermionics, thermoelectricity, and magnetohydrodynamics. He holds several basic patents in the thermionic conversion field. A very active and distinguished career. . . . Mitre Corporation has announced the appointment of **James H. Burrows, Jr.** (S.B., Course XV) as head of the Computer Applications Department, where he will be responsible for various phases of study and experimentation on the application of computers to Air Force command and control systems. Mr. Burrows has an M.S. in mathematics from the University of Chicago, 1951. Prior to his work for Mitre and M.I.T.'s Lincoln Laboratory, he was an instructor at Phillips Exeter Academy, Exeter, N.H., and research assistant at the University of Chicago.—**Frank T. Hulswit**, Secretary, 14 Nadine Road, Saxonville, Mass.

## '50

Here it is 1962! And I am tired! I am tired of breaking January's resolutions. I am tired of getting over the headaches of 1961. I am tired of trying to get the Class of '50 to write me a little more about themselves. And I am tired of making money. In other words I am ready to retire! Just about this time each year I vicariously take myself back to M.I.T., 1950. This year I go back after almost 12 years of industrial life. I feel like an elder statesman and a philosopher combined. Hence, tolerate me for a few paragraphs. . . . It seems to me, in talking with some of the other '50 men, that each of them has a very strong feeling for M.I.T., the nature of which is difficult to verbalize. This feeling for Tech seems to stem more from the heart than the brain. It is not only the technical competence and vast store of knowledge that M.I.T. gave him that he is grateful for, but for the Institute's assistance in helping him develop a "Practical Maturity" as a result of his M.I.T. Experience. This strange and illusive asset that Tech has is one that should be researched because if we don't identify it, define it, and capture it, the likelihood is we'll lose it. It seems to be a combination of many things, including a sense of responsibility to himself and to things bigger than he and his family. It includes an uncompromising search for truth in his work; it includes a very basic honesty, it includes hard work and a desire to succeed; it includes ability to forecast and envision successfully things to come; it includes a great faith and confidence in God and in himself. I have had a chance to talk to a few of you about your reactions to this nebulous feeling that I have about M.I.T. Now may I plead with you to write and tell me what your ideas are so that we may express them in the Class of '50 notes. Since I don't seem to inspire you to write about yourself, then won't you write to me about your feelings for Tech?



All I have for you this month are some address changes that I think will be of interest to you: **William J. Anderson**, 5031 Devon Drive, Olmsted, Ohio; **Robert H. Ausfahl**, 48 Valley View Road, Orinda, Calif.; **Norton Belknap**, 67 Shiba-Isarago-cho, Minato-ku, Tokyo, Japan; **Robert J. Boyden**, 51 Brian Road, West Caldwell, N.J.; **Aubrey I. Chapman, Jr.**, 4611 Irvin Simmons Square, Dallas 29, Texas; **Eugene T. Comeau**, 185 Alameda de la Loma, Navoto, Calif.; **Richard G. Counihan**, 42 Croft Street, Poughkeepsie, N.Y.; **James A. Daley**, 180 Nol Avenue, Chatham, N.J.; **Lloyd K. Dexter**, 8362 Fullbright Street, Canoga Park, Calif.; **Meir Drubin**, 167 Grant Street, Lexington, Mass.; **Daniel E. Flanders**, 2715 Arnot Street, San Diego 10, Calif.; **David E. Gushee**, Siesmayerstrasse 58, Frankfurt/Main, West Germany; **Dr. Charles P. Hadley**, 58 Birch Street, Mountaintop, Pa.; **Captain John A. Hambleton**, 747 Fairdale Avenue, Ottawa 1, Ontario, Canada; **Dr. Alfred C. Haven, Jr.**, 605 Country Club Drive, Wilmington 3, Del.; **Roy W. Jenkins**, Box 91, Nome, Alaska; **W. Paul Jensen**, Apt. 314, 750 South Dickerson Street, Arlington 4, Va.; **Dr. Allen Lurio**, 54 Riverside Drive, New York, N.Y.; **Dr. Thomas J. McLeer, Jr.**, 104 Primerose Drive, New Providence, N.J.; **Dr. George J. Marlowe**, Apt., 10L, 415 East 52nd Street, New York, N.Y.; **Raymond M. Moeller**, 105 Fir Hill, Akron 4, Ohio; **William S. Peppler, Jr.**, 145 Seven Bridges Road, Chappaqua, N.Y.; **Gerald Peretsman**, 153 Oliver Road, Waban 68, Mass.; **Walter A. Platt**, 500-1st Street, Fairlawn, N.J. . . . Looking forward to hearing from all of you soon. Best Wishes.—**Gabriel N. Stilian**, American Management Association, 1515 Broadway, New York, N.Y.

## '51

Important news is worth reporting here even if it is noted rather late. The honor awarded **Mert Flemings** in the form of the Peter L. Simpson Gold Medal of the American Foundryman's Association is a good example. . . . And the fact that **Dave Ragone** was made a full professor of metallurgy by the University of Michigan last summer is another good example. . . . The recent appointment of **Charles L. Miller** as head of the M.I.T. Civil Engineering Department has been reported elsewhere in this journal, but these columns join in the congratulations. . . . Another dated item comes from a recent annual report of Arthur D. Little, Inc., in which the following caption appeared: "By using liquid nitrogen and very cold helium gas to cool this array of tubed shields, chevrons and condenser, **Raymond W. Moore, Jr.** and **Sabino Merra** ('58) were able to demonstrate, for the U. S. Air Force Arnold Engineering Development Center, a high pumping speed for removing gases at very low pressure to produce the ultrahigh vacuums required for space simulation chambers and low density wind tunnels." . . . Our class is represented further in ADL by **John F. Magee**, who serves as a vice-president.

New ventures of our classmates include **Damon Engineering, Inc.** of Needham, Mass. **Carl R. Hurtig** is a co-founder and vice-president. Formerly he served as manager of the research and engineering department at **Hermes Electronics Company**. . . . **James H. Ballou** has opened another architectural office in Salem, Mass. He has maintained an office in Manchester since 1955. . . . **Bill Santelmann** has launched a manufacturing concern, **Walden Electronics Company**. In 1957 he left the **Lincoln Laboratory** to form his own consulting business, **Santelmann Associates**. He has built his business upon civilian contracts solely and thereby avoided dependency upon the erratic behavior of government contracts. . . . **Paul Pothery** last fall joined the **Bay State Refining Company** of Chiscopee Falls, Mass., where he will serve in the company's management. Previously Paul has worked as a metallurgist for **American Smelting and Refining Company** and for **Hamilton-Standard**. . . . **David Findlay** has been appointed sales engineer for the coatings department of the chemical division, **Goodyear Tire and Rubber**. He has been with Goodyear since 1957 as a development engineer working with the company's line of **Pliolite** synthetic latices. Dave's promotion is not his only news, though, for he and his wife also announced the birth of **Lois Gates** on December 14.

At the 9th Weather Radar Conference at Kansas City, Mo., October 23-28, the class was represented by **David Atlas**, who with a colleague discussed "Precipitation Motion by Pulse Doppler Radar." David is with the **Air Force Cambridge Research Laboratory**. . . . **Bernard Widrow**, assistant professor of electrical engineering at Stanford, has been working on computers which can learn and remember. A feature story appeared in a California paper describing **Adaline** and **Madaline**, the first of several devices he has built. . . . **James F. Wygant**, section head at the **Whiting, Ind.**, research laboratories of the **American Oil Company**, spoke before the St. Louis section of the **American Ceramic Society** last December. From the company's news release we learned that in 1959 he was named the nation's outstanding young ceramic engineer by the **National Institute of Ceramics Engineers**. . . . The last installments in the readable accounts of **Dick Ahern's** travels show him to have reached the States after an exciting tour of the Middle East. He is back with the **Detroit City Planning Commission** part-time and devotes the rest of his time to lecturing, writing, sketching, and private practice. Many thanks, **Dick**, for your interesting letters.—**Richard W. Willard**, Secretary, Box 105, Littleton, Mass.; **Forest C. Monkman, Jr.**, Assistant Secretary, 46 Lincoln, Hingham, Mass.

## '52

Well, we are finally around the corner of winter, the days getting longer, the weather getting better, and the time is getting closer to 10th Reunion on the

Cape. Watch this space for latest details. **Jim Davidson**, Publicity Chairman of the reunion, is having quite a mailbox full these days, as the reunion questionnaire keeps coming in. . . . **Swraj Paul** writes from Calcutta, India, that he is the owner of **Amin Chand Payare Lal** and that this is a company involved in the steel industry, shipping lines, construction, etc., and that he hopes to be over in June. . . . **Thomas M. McCarthy** writes from Newcastle on Tyne, England, that he is manager of the development department of **Thomas Hedley and Company, Ltd.**, chemicals. . . . **James A. Weissburg** is with **Westinghouse Atomic Power Laboratory**, as a reactor design engineer, and mentions that he sees **George Splotzkados**, who is vice-president of **Transcontinental Kenestatics, Inc.** (Seems to me I've heard that name before?). . . . **Ronald L. Bustead, Jr.**, is with **Schroeder Industries, Inc.**, as plant chemist in Woburn, Mass. . . . **Myron W. Belaga** is with **Esso International, Inc.** as section head of the supply department, in Cranford, N.J. . . . **Alexander Maidanatz** is in Brussels as manager of **Telenor Division** of **Telemecanique Electrique**. . . . **Bruce G. Curry** is with **RCA EDP** as a regional methods manager backing up the sales department; he is living in Haddonfield, N.J. . . . **Gunnar Folke** writes in from Sandviken, Sweden, that he is manager of the tube extension mill for **Sandvikens Vernverks, AB**. . . . And **Ed Margulies** writes from Albany that he is chief resident in surgery at **Albany Medical Center**, finishing up in June, 1962.

From London, **G. Robert Koch** writes he is a contracts engineer for **Kaiser Engineers and Constructors, Inc.**, working on the **Volta River Hydroelectric Project**, Ghana, in the London Office. (Cute address: **Bow Bells House, Bread Street**.) . . . **Arnie G. Kramer** is with **Avien, Inc.**, as antenna section head working on the design and development of tracking and telemetering antennas in Yonkers, N.Y. . . . **Charles W. Sorenson** is in Schenectady, N.Y., with **General Electric** as an engineer working on the design of a nuclear power plant for a destroyer being built in Quincy. . . . **James R. Strawn** is with **Standard Oil Company of Texas** (stop at the **Chevron** sign) as a geophysical analyst, working with the interpretation of gravity and magnetic data. He mentions working toward his M.B.A. at the University of Houston evenings. **Jim** writes that he sees **Joe F. Moore** and **Lou Karvelas** (with **Bonner** and **Moore**), **Paul Kaminsky** and **Jim Arbogast** (with **Shell**), and **Robert L. Moore**, **Heinz Gunther**, **Newell Trask**, **Frank Wheby**, **Dean Wadsworth**, **John Small** and **John McGinley**. (And so, anyone headed for Houston, we have quite a chapter down there.) . . . **George Mellor** is assistant professor of fluid dynamics at **Princeton University**. . . . **George Bradley** is with **Bridgeport Brass Company** as supervisor of process engineering and is living in Trumbull, Conn. . . . **Nick Melissas** sends up an address from D.C. where he is with **Thiokol, National Electronics Division** as administration manager.

From Helsinki, Finland, an interesting



letter from **O. Mauri I. Kurki-Suonio** who writes that he is with Volkswagen Auto-OY "trying to take care of about 24,000 Volkswagens in Finland. I used to work for Packard, but frankly the American cars are losing the market here. If they don't bring a small economical car soon. . . ." He also extends the kind invitation to anyone heading to Moscow, the present tourist hit, to let him know and romp in! (address: Jaalanite 5, Helsinki, Finland.) . . . **Irwin Grossman** writes from Dallas, Texas, that he is president of the Fairway Company, general contractors. And at the moment, that is it, or this column won't make The Review deadline.—**Dana M. Ferguson**, Secretary, 242 Great Road, Acton, Mass.

## '53

Glad to receive the annual Christmas note from **Sid and Grayce Hess** (who are living in Delaware with their twosome of six and two years). Their year has been hectic, included much traveling, and a promotion for Sid, who has been appointed manager of operations research in Atlas Chemical Industries' development appraisal department. . . . **Ken Churney** completed his doctorate in physical chemistry at M.I.T. in 1961, and has joined the staff of the National Bureau of Standards, where he will work in the Heat Division. Ken's principal field of research is photometry, and he will study the heats of combustion of metals of low atomic weight in fluorine by bomb calorimetry. . . . **Ernest and Shirley Rifkin** forwarded a "birth report card" which announced the late October arrival of a son; both parents and child doing well, and all are living in Quaker Hill, Conn. . . . **Jim Howard** has been named sales manager of the Sanborn Company's transducer division. Prior to this appointment, Jim served as sales manager for RdF Corporation, and as a development engineer at Raytheon's special tube division.

Within the next year-and-a-half, a nomination committee will be formed to select candidates for office; each person designated will be contacted to assure his approval. The election of officers will then be held at class reunion (though the candidates need not be present); further, write-in candidates will be permitted on the ballot. Lastly, anyone desiring to be considered for office should forward his or her name to either **Paul Shepherd** (16 Scout Hill Lane, Reading, Mass.) or myself; your name will be passed on to the nomination committee for consideration. Of course, you may nominate others for office in this fashion. . . . Hope you had a pleasant holiday season.—**Martin Wohl**, Secretary, Room 1-131, M.I.T., Cambridge 39, Mass.

## '54

March appears to be as appropriate a time as any for our second annual survey of members of the class who are more actively engaged in Alumni activities. This

year, our amiable Vice-president, **Charlie Masison**, very kindly compiled the list for me, saving me considerable work. It is greatly appreciated, Charlie. Several members of the class are serving as Educational Counselors in various parts of the country, maintaining contact with the high schools in their areas and interviewing prospective M.I.T. students. These include **Jim Athan** in Tampa, Fla.; **Bert Beals** in Oklahoma City; **Mike Boylan** in Houston, Texas; **John Bradshaw** and **Jerry Carpenter** in Norfolk, Va.; **Bill Rouzie** in Portland, Ore.; **Harry Taylor** in Sacramento, Calif.; and **Duane Yorke** in Massapequa Park, N.Y. Another group is infiltrating the local M.I.T. Clubs. **Jim Athan** (a very active type) is assistant secretary of the Tampa, Fla., Club; **Mariano Avelo** is secretary of the Caracas, Venezuela, Club; **Hugo Belalcazar** is treasurer of the Bogota, Columbia, Club; **Joe Kozol** is secretary of the Hartford, Conn., Club; **Leon D. Michelove** is treasurer of the Schenectady, N.Y., Club; **John E. Preschlack** is treasurer of the New York, N.Y., Club; **Charlie Riley** is vice-president of the Orlando, Fla., Club; and **Rich Wilson** is assistant secretary of the Cleveland, Ohio, Club.

In the M.I.T. Women's Association, **Anna Bailey** is corresponding secretary and **Mrs. Shushan M. Teager** is recording secretary. **Dean L. Jacoby** serves as a member of the Departmental Visiting Committee for Student Activity, in addition to being our class agent for the Alumni Fund. **Charlie Masison** and **Wally Boquist** are associates of the Alumni Council, and **Bob Anslow** is our class representative on the Alumni Council, as well as our class president.

In addition to the above, **Charlie Masison** also reports that his current interest at the Sylvania Electronics Works is communications switching systems. He sends further word that **Nick Saber** and **Mel Cerier** are among his fellow toilers at Sylvania, and that **Bob Reichard** is working for the Computer Control Company and living in Sudbury, Mass. . . . A letter from **Roy Riedinger** informs us that he has moved from Baltimore to Cincinnati, where he is in the Technical Packaging Division of Procter and Gamble. His new job involves considerable travel, and he warns all that he might "pop in out of the sky some day." Roy is still enjoying the bachelor life, and claims that there are no immediate prospects for changing his status. . . . A few other items have come to light from hither and yon. **Dick and Ellin Hayes** now have two daughters, the second, **Victoria Alexandra**, having been born last November 1. **Dick** is a captain in the Air Force, currently stationed at NASA in Washington. . . . **Carl Alsen** has been appointed assistant to the manager of the Philadelphia Sales Office of the General Radio Company. He recently moved to Philadelphia from the company's West Concord, Mass., office. . . . **Ev Chambers** has been in the South Pole area taking part in the Air Force's Operation Deep Freeze. Ev is a captain in the Air Force and pilots a C-124 transport, toting supplies for the boys down yon. It is assumed that his wife **Bobbie Ann** and daughter **Nancy** are still here in the

U.S.A. . . . That about empties our bag of news for the month. You could be a big help to me in future months by sitting down right now and scribbling out a card or letter about your current status in life. It would certainly be appreciated, not only by me, but by all who receive these notes each month.—**Edwin G. Eigel, Jr.**, Secretary, 6932 Chippewa Street, St. Louis 9, Mo.

## '55

We received a cute note from **Bob and Carol Posner** postmarked Baltimore. Bob has taken a senior position with the Wexler Construction Company, Newton, Mass., and has been assigned to projects out of their Maryland office. They are at 108 West 39th Street, Baltimore 10, and would be happy to hear from any of us in the neighborhood. . . . At a Cambridge cocktail party over the New Year, I bumped (staggered) into **Charlie Fink**, '56. He is with **Lester J. Millman Associates**, Architects and Planners, Providence, and looked quite prosperous. Charlie had taken a pretty wife a few months previous, but in between the cocktails, etc., the vital statistics for this "society" column were lost. . . . **Dave Lipke** had quite an interesting experience a while back. He addressed the Norwegian Radio Engineers Association on the use of satellites for long-range communications. This was part of his job as a project engineer at the Communications Laboratory, Air Force Cambridge Research Center, Bedford, Mass. After the presentation, Dave spent several weeks on a holiday in the Scandinavian countries. . . . **Jim Eacker**, our Class President, called recently about getting some more bulk into our monthly (?) columns. The basic problem is lack of two-way communications. Jim suggested setting up regional secretaries to help us by being on the lookout for items of interest. This will not only improve the column, but will also train candidates for the next election at our 10th Reunion. Please write if you (or your wife) would be interested.—Co-Secretaries: **Mrs. J. H. Venarde**, 2401 Brae Road, Arden, Wilmington 3, Del.; **L. Dennis Shapiro**, 15 Linnaean Street, Cambridge 38, Mass.

## '56

Announcing this month a new assistant to the secretary for the Washington, D.C., area, **Jack Saloma**. Working with Jack will be the co-class agent, **Garry L. Quinn**. Jack's address is the Capitol Apts., N-524, 800-4th Street, S.W., Washington 24, D.C. . . . Last summer, about reunion time, I met **Brad Terry** on the street in Boston. He was home on leave from **George A.F.B.**, Calif., where he is a pilot in the Tactical Air Command. Brad is making the Air Force a career and enjoys his duty very much. Of course, this includes periodic special assignments in Europe. . . . Also last summer, when I was spending some time at Tech, I met

**Bill Yap** in the hallway. Bill has been a steady resident there and is now collecting an advanced degree in nuclear engineering. . . . **Fred Langmack** is now an instructor in language and literature at Rensselaer. He received his master's at Iowa State and, I believe, specializes in technical writing. . . . **Frederick Cleveland** is at an U.S.A.F. Aircraft Control and Warning station in Kure Beach, N. C. . . . **Lewis Costello** is studying law at the University of Virginia. . . . **Dick Miller** received his doctorate from Tech in 1961 and is now on active duty with the Army at the Chemical Biological Laboratory at Fort Detrick, Md. . . . **Lester Senechale** is in the math department at the University of Tennessee in Knoxville. . . . **Arnold Siegel** is with Computronics at Fort Lee, N.J.

**Warren** and **Renata Briggs** spent Christmas in Wiesbaden, Germany with her parents. Your secretary and his wife were present at a small bon voyage celebration at the Faculty Club. While there **Warren** and I double-teamed **Bob Kaiser** to find out that that he is on active duty with the Army while completing his Sc.D. in chemical engineering. Later, in the airport waiting room, we met and had a chat with **Dean Bowditch** and his family.—**Bruce B. Bredehoft**, Secretary, 1094 Center Street, Newton Centre 59, Mass.

## '58

First some news about our class president **Bob Jordan**. After M.I.T., Bob spent three years at the Harvard Law School where he distinguished himself by becoming one of the highly esteemed editors of *The Law Review*. Now in the Army, he is serving in the Judge Advocate's Office at the Army Chemical Center, Md. In addition to the above activities, Bob is in partnership with **Arnie Amstutz** and **Butch Dickerson** in the Scientific Development Corporation, explained in the December, 1961, notes. From all reports this business is doing very well with other new products on the way. Butch Dickerson spends part of his time in the Institute Admissions Office and the rest at S.D.C. Earlier this fall he was named to membership in the Inter-Varsity Christian Fellowship Corporation. . . . **Bill Daly** reports that **Murray Kohlman**, officially '59, was in the area this fall on vacation. Murray is still studying in B'Nai Brach, Jerusalem. He looks sun-bronzed and very happy. Speaking of the Dalys, they had a daughter, Martha Kay, born in October. Bill also saw **Lee Holloway** who plans to get his Ph.D. in physics this May. He commutes between Berkeley, Calif., and the University of Pennsylvania on his thesis work. Must be an important study. . . . **Bob Cooper** was married in August, 1959, to Jean Forgit and now has two daughters, aged 15 months and 4 months. They live in Waltham while he works at Avco. . . . After getting his master's in electrical engineering at the Institute, **Mike Balderston** went to work for the Naval Ordnance Labs in Maryland. Right after graduation he married Joyce

Gallagher. They are proud homeowners in Maryland where Mike works at A.M.F. . . . **Bill Duffy**, now out of the Army and married to Ellie Warren, is working for Warren Brothers in Boston.

We have finally gotten our facts straight on **Bob Hecht**. He writes that he was married on October 7, 1961, to Patricia Ann Guy, a 1961 Simmons graduate. Bob is an associate physicist for IBM's Components Division in Poughkeepsie, N.Y. . . . **Edmond Vinarub** went to work for Sperry Gyroscope in Great Neck, N.Y., in September. He is working on his M.S. at Columbia. . . . **Stephen Shain** got his Ph.D. at the University of California this June and is now on the professional staff of Shell Development Company in Emeryville, Calif. **Dave Larson** and family have moved to Minneapolis where Dave is teaching math at Edina High School. . . . **Toni Schuman** writes of **Lee Gillard** on the coast as a company rep from M.I.T. Part of Lee's time is devoted to the SINS project at Nortronics in L.A. and the rest at Lockheed in Sunnyvale.

We have a few items about our graduate members. A major basic research grant in chemistry has been awarded by the National Science Foundation to Dr. **John George**. Dr. George is an assistant professor in chemistry at the University of Massachusetts. . . . **George Krauss, Jr.** has been awarded a post-doctoral fellowship by the National Science Foundation. George's award is in engineering for one year. He will study at the Max-Planck Institute in Dusseldorf, Germany. . . . Arthur D. Little, Inc.'s recent annual report highlighted a job accomplished by **Sabino Merra**. He produced the ultra-high vacuums required for space simulation chambers and low density wind tunnels. . . . **Donald B. Bruck** is stationed at Hanscom Field as an electronics engineer for the Military Communications Satellite Systems Division of the U.S.A.F.—**Cornelius Peterson**, Secretary, 65 Sweetwater Avenue, Bedford, Mass.; **Antonia D. Schuman**, Western Associate, 22400 Napa Street, Canoga Park, Calif.; **Kenneth J. Auer**, Midwestern Associate, 12955 Harlon Avenue, Lakewood 7, Ohio; **William G. Daly, Jr.**, Eastern Associate, 125 White Street, Waverley, Mass.

## '59

It was good to hear from several of you during the past month. I hope the trend continues. **Barry Weinberg** is presently working on his M.S. in electrical engineering at Tech. Barry hopes to complete his studies in June. Last September, he was married to the former Judith Ann Klieger of Fair Lawn, N.J. Best of luck, Barry. . . . Also heard from **Dick Sampson**. Dick writes, "**Don Tyra**, **Chuck Staples** and I are all living here in Orlando now, and working at the Martin Company. We heartily recommend Florida as a good place to live. Good weather and lots to do here, entertainment and recreation. The Staples have a big ranch type home complete with a swimming pool. Don and I have a new four-bedroom

house on a lake which we share with two others." Dick also writes about his coming wedding to Betsy Arnold of Orlando, next June 16. Betsy attended Principia College and Rollins College. . . . **Dick Talbot**, now an Air Force first lieutenant, has been recently assigned to the aerospace research engineering division of the 3245th Maintenance and Supply group at Hanscom Field. . . . **Barrie S. Shabel** has recently completed his master's in metallurgical engineering at R.P.I. Barrie is with the Knolls Atomic Power Laboratory of General Electric. I hope to hear from everyone in the near future.—**Robert A. Muh**, Secretary, 1200 Commonwealth Avenue, Allston, Mass.

## '61

Back again at the old stand, I am pleased to report that a goodly pile of clippings, news notes, and brief words concerning various members of the class is piling up. At the risk of not having it all exactly the latest poop by the time it gets to you, I am going to hold onto it until a larger portion of the class is getting *The Review*. If you are one of those who does not yet get his copy on a regular basis, let me remind you that a contribution to the Alumni Fund at any time brings you *The Technology Review*; a contribution to the Second Century Fund has the same effect. With the latter drive well under way in the class, there is no reason why a larger fraction of our number shouldn't be seeing TR by the time May rolls around. . . . It is too early to report anything conclusive on '61's effort in the S.C.F. drive, but we will keep you posted. The goal is, of course, to donate enough to finance some area of the new Student Union, hopefully a lounge. As M.I.T.'s most recent Alumni, we know the need for at least a few buildings besides research centers at Tech. The Student Union plans got new life injected into them when the block of stores opposite 77 Massachusetts Avenue was gutted by fire last October. The last remains of the building that once housed Tech Drug, Larry's Barber Shop, WGBH, etc., were carted away only a few weeks ago at this writing. The land now lies idle. "Meet you in the '61 Lounge," sounds pretty good to me.

The big news, for any of you within a jet flight of Boston, is that the class will be getting together for its 1st Reunion the first weekend in May, in the form of a cocktail party at the Faculty Club. Circle Saturday, May 5, on your calendar and be there at 4 P.M. that day if you can possibly make it. Plans are still in the early stages, but the data is confirmed. The weekend is also the occasion of a big undergraduate (ahem) fling, so it should be a good time to come back to the campus if you've been away, with additional diversions if you're interested. As for all the rest of you still here at Tech, as well as those employed in the Boston area, see you there!—**Joseph Harrington, 3d**, Secretary, M.I.T. Graduate House, Room 212A, 305 Memorial Drive, Cambridge 39, Mass.



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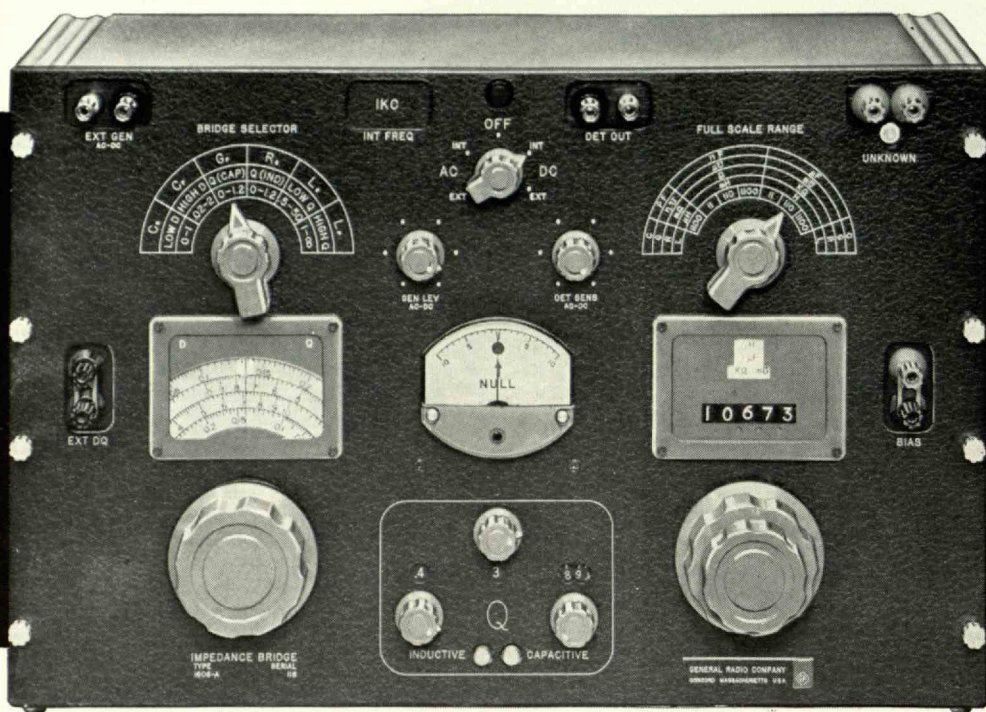
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DESIGN**

**CHEMICAL  
PROCESSES**

# NEW

## 0.1% IMPEDANCE BRIDGE



...with  
error-proof  
digital  
readout

Type 1608-A  
Impedance Bridge  
\$1175

- ✓ Digital readout of C, R, L, and G with automatic decimal-point location; unit of measurement also automatically indicated.
- ✓ Appropriate D and Q scales illuminated automatically . . . no multiplying factors to remember.
- ✓ 6 bridges in one. Lets you measure components having any D or Q. Measures series or parallel L or C, or series R or parallel G and Q.
- ✓ Self-contained oscillator and selective null detector. Plug-in modular construction facilitates changing fixed frequency (1-kc unit supplied).
- ✓  $\pm 0.1\%$  basic C, R, L, and G accuracy; high phase ac-

curacy at 1 kc permits determinations of D to 0.0005 and Q to 2000. Good high-frequency characteristic permits measurements to an accuracy of  $\pm 0.2\%$  at 10 kc.

- ✓ Rapid balancing made possible by coaxial balance control having only coarse and fine adjustments.
- ✓ Three internal dc supplies allow standard EIA voltages to be set over most of the resistance range.
- ✓ Provision for applying external d-c bias to components under measurement.
- ✓ Provision for using external generator or detector (dc or ac, 20c to 20 kc).

### SPECIFICATIONS

**Ranges:** Resistance: 0.05 m $\Omega$  to 1 M $\Omega$  in 7 ranges (ac or dc)  
Conductance: 0.05 n $\Omega$  to 1 $\Omega$  in 7 ranges (ac or dc)  
Capacitance: 0.05 pf to 1000  $\mu$ f in 7 ranges (series or parallel)  
Inductance: 0.05  $\mu$ h to 1000h in 7 ranges (series or parallel)

**at 1 kc:** D (series C): 0 to 1 D (parallel C): 0.02 to 2  
Q (series L): 0.5 to 50 Q (parallel L): 1 to  $\infty$   
Q (series R): 0 to 1.2 Inductive Q (parallel G): 0 to 1.2 Capacitive

**Accuracy (at 1 kc):**  $\pm 0.1\%$  of reading  $\pm 0.005\%$  of full scale except on lowest R and L ranges and highest G and C ranges where it is  $\pm 0.2\%$  of reading  $\pm 0.005\%$  of full scale. D and 1/Q accuracy are  $\pm 0.0005 \pm 5\%$  at 1 kc for L and C;  $\pm 0.0005 \pm 2\%$  in Q for R and G.

**Residual Terminal Impedance:** R  $\approx$  1 m $\Omega$ , C  $\approx$  0.25 pf, L  $\approx$  0.15  $\mu$ h.

**Power Requirements:** 105-125 or 210-250 volts, 50-60 cycles.

**Type 1608-A Impedance Bridge, \$1175.**

For rack mounting (1608-AR) or bench (1608-AM).

**See This New Bridge  
at the IRE Show**  
*Also see these new products:*  
INCREMENTAL INDUCTANCE BRIDGE  
CAPACITANCE BRIDGE • MICROWAVE OSCILLATOR  
PRECISION L AND C STANDARDS • PULSE GENERATOR  
and a totally new concept in low-cost solid-state counters.  
**Booths 3201-3208**

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